

SPECIFICATIONS

St. Joseph Public Schools

High School Technology

**PROJECT NUMBER
SJPS 2344A**

**REQUEST FOR PROPOSAL
January 20, 2012**



SECANT
TECHNOLOGIES

Computers, networking and whatever else comes next.

6395 Technology Avenue, Kalamazoo, MI 49009
Phone: 269-375-8996 Fax: 269-375-4222 www.secantcorp.com

TABLE OF CONTENTS

| | | |
|----|--|----|
| 1 | Schedule of Events..... | 2 |
| 2 | Terms and Conditions..... | 4 |
| 3 | Project Overview..... | 13 |
| 4 | General AV Specifications..... | 17 |
| 5 | General AV Control Specifications..... | 23 |
| 6 | AV1 – Typical Classroom AV Systems..... | 26 |
| 7 | AV2 – Science Room AV Systems..... | 28 |
| 8 | AV3 – Food Lab AV System..... | 30 |
| 9 | AV4 – Conference Room AV System..... | 31 |
| 10 | AV5 – Student Commons AV System..... | 32 |
| 11 | AV6 – Music Room AV Systems..... | 35 |
| 12 | AV7 – Small Conference Room AV System..... | 37 |
| 13 | Digital Signage System..... | 38 |
| 14 | Intrusion Alarm System..... | 40 |
| 15 | Clock/Bell/Paging System..... | 48 |
| 16 | Access Control System..... | 53 |
| 17 | Surveillance Camera System..... | 57 |
| 18 | Structured Cabling..... | 60 |
| 19 | Loose Equipment – Audio Visual..... | 68 |
| 20 | Intent to Bid..... | 69 |
| 21 | Vendor Profile..... | 70 |
| 22 | Familial Disclosure Form..... | 71 |
| 23 | Non-Collusion Affidavit..... | 72 |
| 24 | Technology Vendor References..... | 73 |
| 1 | Proposal Forms..... | 75 |

1 Schedule of Events

Specifications Released

01/20/2012

Project Specifications are available from:

Melissa Miller

Fax: 269-375-4222

Email: mmiller@secantcorp.com

Printed Drawings may be ordered from:

Kal-Blue

914 East Vine Street

Kalamazoo, MI 49001

269-349-8681

www.kalblue.com

Pre-bid Meeting

01/31/12 @ 3:00 p.m.

Location:

St. Joseph Public Schools

Central Administrative Office

3275 Lincoln Ave.

St. Joseph, MI 49085

Deadline for Intent-to-Bid Notification

02/02/2012 @ 5:00 p.m.

All prospective bidders should provide notification of their intent to bid by fax or e-mail to:

Melissa Miller

Fax: 269-375-4222

Email: mmiller@secantcorp.com

Deadline for questions

02/02/2012 @ 5:00 p.m.

Melissa Miller

Fax: 269-375-4222

Email: mmiller@secantcorp.com

Bid Due Date

02/13/2012 @ 3:00 p.m.

Late bids will not be accepted.

Deliver bids to:

St. Joseph Public Schools

Attn: John Ruddell

3275 Lincoln Avenue

St. Joseph, MI 49085

Provide three (3) sealed copies of your response.

Bids must be clearly marked:

St. JOSEPH HIGH SCHOOL TECHNOLOGY - PROJECT 2344A - BID RESPONSE – DO NOT OPEN

Bid Bond: 5% bid bond is required – Cashiers Check or Bond

Performance Bond is required

No bids may be withdrawn for at least sixty (60) consecutive calendar days following the bid opening.

The Owner reserves the right to accept or reject any and all bids, alternatives, or proposals that, in his judgment, serve his best interests.

The Owner reserves the right to award individual sections to different contractors

The Base Bid shall be a lump sum amount, for the work as set forth in the Bidding Documents.

Public Bid Opening Meeting

St. Joseph Public Schools
Central Administrative Office
3275 Lincoln Ave.
St. Joseph, MI 49085

02/13/2012 @ 3:01 p.m.

2 Terms and Conditions

2.1 SALES TAX

The Contractor shall be responsible for the payment of any tax obligation it may incur in connection with the work of this project, including but not limited to State sales and use taxes. The cost of these shall be included in the bid price.

2.2 PERFORMANCE AND PAYMENT BOND

- A. If the total bid amount exceeds \$50,000.00, acceptable bidders shall be required, as a condition precedent to award of contract, to furnish satisfactory Performance Bond and Labor and Material Payment Bond in the amount of 100% of the contract price.
- B. The bidder shall deliver the required bonds to the Owner within 15 days after award of the contract. If the work is to be commenced prior thereto in response to a letter of intent, the bidder shall submit evidence to the Owner that such bonds will be furnished prior to commencement of the work.
- C. The proposed bonding company of the bidder shall be acceptable to the Owner. The Owner shall be listed as obligee on the bond.
- D. Contractor will not be allowed onto the project work site to begin work until after submittal of required bonds to the Owner.
- E. All costs for the Performance Bond and Labor and Materials bond must be included with base bid response.

2.3 BID SECURITY

- A. Each Proposal shall be accompanied by Bid Security pledging that the bidder will enter into a contract with the Owner on the terms stated in the Proposal, and will furnish Bonds as described herein. Should the bidder refuse to enter into such contract or fail to furnish satisfactory Bonds and insurances as required after Notice to Proceed, the amount of the Bid Security shall be forfeited to the Owner as liquidated damages, not as a penalty.
- B. Bid Security shall be in the amount of five percent (5%) of the Base Bid(s).
- C. Bid Security may take the form of a Bid Bond, Certified Check, Cashier's Check, or a Money Order. When submitting a Certified Check, Cashier's Check or Money Order for multiple Bids, it is recommended that a separate check or money order accompany each bid. **AN UNCERTIFIED PERSONAL OR COMPANY CHECK DOES NOT CONSTITUTE A BID SECURITY.**
- D. The Owner will have the right to retain the Bid Security of bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all bids have been rejected.

2.4 INSURANCE

- A. Limitation of Liability – By signing the bid, the bidder acknowledges that he/she is skilled and experienced in the use and interpretation of the Specifications. He/she has reviewed the Specifications for this project and has found them to be free of ambiguities and sufficient for Bid purposes. He/she has based his/her Bid solely on these documents and observations and has not relied in any way on any explanation or interpretation, oral or written, from any other source.
- B. Insurance Required – Prior to commencement of the work, the Contractor shall provide to the Owner satisfactory proof of insurance and maintain during the term of the project such insurance as will protect him and the Owner from claims arising out of the Work described in this contract and performed by the Contractor or Subcontractors consisting of:
 - 1. Worker's Compensation Insurance including Employer's liability to cover employee injuries or disease compensable under the Worker's Compensation Statutes of the State of Michigan, disability benefit laws, if any or Federal compensation acts such as U.S. Longshoremen or Harbor Workers', Maritime

- employment, or Railroad Compensation Acts, if applicable. Self-insurance plans approved by the regulatory authorities in the State of Michigan are acceptable.
2. A Comprehensive General Liability policy to cover bodily injury to persons other than employees and for damage to tangible property, including loss of use thereof, including the following exposures:
 - a. All premises and operations.
 - b. Explosion, collapse, and building damage.
 - c. Contractor's Protective coverage for independent contractors or subcontractors employed by him.
 - d. Contractual Liability for the obligation assumed in the Indemnification or Hold Harmless agreement found in the Supplemental Conditions section of this Contract.
 - e. The usual Personal Injury Liability endorsement with no exclusions pertaining to employment.
 - f. Products and Completed Operations coverage. This coverage shall extend through the Contract guarantee period.
 3. A Comprehensive Automobile Liability policy to cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned and hired vehicles. In light of standard policy provisions concerning (1) loading and unloading and (2) definitions pertaining to motor vehicles licensed for road use vs. unlicensed or self-propelled equipment, it is strongly recommended that the Comprehensive General Liability and the Comprehensive Auto Liability be written by the same insurance carrier, though not necessarily in one policy.
 4. Umbrella or Excess Liability: The Owner, for this project may waive the umbrella or excess liability coverage under the "Limits of Liability" below. This coverage may be considered when awarding this contract, however, it is not a requirement of this contract. The Contractor is granted the option of arranging coverage under a single policy for the full limit required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy equal to the total limit(s) requested. Umbrella or Excess policy wording shall be at least as broad as the primary or underlying policy(ies) and shall apply both to the Contractor's general liability and to his automobile liability insurance. The Owner, St. Joseph Public Schools, shall be listed as Additional insured.
 5. Property Insurance: The Contractor shall be solely and exclusively responsible for all of its equipment and materials used or located at the Project. The Owner is hereby released and shall not have any liability of any kind whatsoever for any damage, destruction, vandalism, theft or any other loss of any kind to Contractor's equipment and materials used or located at the Project.
 - a. The Contractor shall effect and maintain similar property insurance on portions of the work stored off site or in transit when such portions of the work are included in an application for payment.
- C. Limits of Liability – The required limits of liability for insurance coverage required under "Insurance Required" above shall be not less than the following:
1. Workers Compensation

| | |
|--|-----------------------|
| Coverage A – Compensation | Statutory |
| Coverage B – Employer's Liability | \$1,000,000.00 |
 2. Comprehensive General Liability

| | |
|--|-----------------------|
| Bodily Injury – Each Occurrence | \$1,000,000.00 |
| Bodily Injury – Aggregate | |

(Completed Operation)

| | | |
|----|---|-----------------------|
| | | \$1,000,000.00 |
| | Property Damage – Each Occurrence | \$1,000,000.00 |
| | Property Damage – Aggregate or combined single limit | \$1,000,000.00 |
| 3. | Comprehensive Automobile Liability | |
| | Bodily Injury – Each Person | \$1,000,000.00 |
| | Bodily Injury – Each Occurrence | \$1,000,000.00 |
| | Property Damage – Each Occurrence or combined single limit | \$1,000,000.00 |
| 4. | Umbrella or Excess Liability | \$2,000,000.00 |

D. Insurance – Other Requirements

1. Notice of Cancellation or Intent Not to Renew – Policies will be endorsed to provide that written notice shall be given to the Owner of cancellation or of intent not to renew.
2. Evidence of Coverage – Prior to commencement of the Work, the Contractor shall furnish to the Owner, Certificates of Insurance in force. The Owner reserves the right to request complete copies of policies if deemed necessary to ascertain detail of coverage not provided by the certificates. Such policy copies shall be “Originally Signed Copies,” and so designated.
3. Qualification on Insurers – In order to determine financial strength and reputation of insurance carriers, all companies providing the coverage required shall have a financial rating not lower than XII and a policyholder’s service rating no lower than A+ as listed in A.M. Best’s Key Rating Guide, current edition. Companies with ratings lower than A+: XII will be acceptable only upon written consent of the Owner.
4. Subrogation Clause – The following subrogation clause shall appear in all policies of insurance, “Subrogation Clause – It is hereby stipulated that this insurance shall not be invalidated should the insured waive in writing prior to a loss any or all right of recovery against any part for loss occurring to the property described herein.”
5. Additional Insured Provision on Policy(ies) is to read as follows:
“The St. Joseph Public Schools, its elected or appointed officers, officials, employees and volunteers are included as insured with regard to damages and defense of claims arising from:
 - a. activities performed by or on behalf of the Named Insured,
 - b. products and completed operations of the Named Insured,
 - c. premises owned, leased or used by the Named Insured, or
 - d. the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Named Insured.”
6. Secant Technologies shall also be listed as Additional insured.

2.5 ENVIRONMENTAL STATEMENT AND RESPONSIBILITY OF CONTRACTORS AND SUBCONTRACTORS

- A. It shall be the responsibility of the Contractor to pay any and all costs incurred from the clean up related to any environmental hazard created by means of release, spill, leak or any other means of contamination caused by accident or negligence.
- B. It shall be the responsibility of the Contractor to dispose of any product(s) and/or material following EPA, DNR, and local applicable laws and regulations.

- C. It shall be the responsibility of the contractor, if required, to purchase the proper permits and notify the proper authorities prior to commencing said project or, should a "release" take place, to notify proper authorities of any such release.
- D. It shall be the responsibility of the Contractor to maintain on site a blood borne pathogen plan and all necessary safety supplies associated with any spill or clean up that may occur. Contractor shall, prior to commencement of any site activities, supply to the Construction Manager, a written description of its site specific safety plan and accident prevention program. This shall serve as proof of compliance with the foregoing provisions and for coordination with the safety programs of other trade contractors.
- E. The Contractor shall not use the Owner's dumpsters for any materials of any kind.
- F. Please be aware that St. Joseph Public Schools buildings contain various types of asbestos containing material (ACBM). Each building has been previously inspected with locations of ACBM being identified within the Asbestos Management Plan book located in each building's administration office. This binder will identify known locations of asbestos materials within that particular building.
Asbestos containing materials include, but are not limited to: floor tile, linoleum, plaster, pipe insulation, spray on material to walls and ceilings/support structures, wallboard, and gaskets. If any building materials that are known or suspected of containing asbestos are encountered, stop work in that area immediately. It is St. Joseph Public Schools policy that no outside contractor may touch ACBM without explicit permission from Facilities Management. Owner's representative will take samples and analyze and provide further instruction. Contractor is responsible for any fiber release that results in fiber concentration above the Permissible Exposure Limit (P.E.L.).
- G. The Contractor shall submit verification and confirmation of the above.

2.6 Quality Assurance

2.6.1 Materials

Furnish only new, first-class quality materials and equipment to be delivered, erected, connected and finished in every detail, selected and arranged to fit properly into spaces. Where no specific kind or quality of material is specified, furnish first-class quality standard article, approved by Owner.

2.6.2 Current Versions

Supply most current version of all products being provided. Prior and/or old versions of products, unless specifically identified as an exception to this requirement, in this document or its subsequent addenda and/or bulletins, shall not be acceptable. In cases where a newer version of a product is available at the time of installation, request a clarification from the Owner, in writing, via fax, electronic mail, or letter, on which product is to be used.

2.6.3 Standards Compliance

Comply with latest edition or revision of each standard of code mentioned in these specifications for use in the intended environment as follows:

- American Insurance Association (AIA)
- American Insurance Service Group (AISG)
- American National Standard Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- Alliance for Telecommunications Industry Solutions (ATIS) Bellcore
- Building Officials and Code Administrators International, Inc. (BOCA)
- Ceilings and Interior Systems Construction Association (CISCA)
- Electronics Industries Association (EIA)
- Federal Communications Commission (FCC)
- Federal Information Processing Standards (FIPS)
- General Services Administration (GSA)
- International Conference of Building Officials (ICBO)
- Institute of Electrical and Electronics Engineers, Inc. (IEEE)

International Organization for Standardization (ISO)
International Telecommunication Union (ITU) (Formerly CCITT)
National Electrical Manufacturers Association (NEMA)
National Fire Protection Association (NFPA)
National Electrical Code (NEC) – NFPA 70-1993
Telecommunications Industries Association (TIA)
Underwriters' Laboratories (UL)
National Institute of Standards and Technology (NIST)
National Technical Information Service (NTIS)
Occupational Safety and Health Administration (OSHA)
Rural Utilities Services USDA/RUS (RUS Formerly REA)
State and Local Municipality Codes and Ordinances
Building Industry Consulting Service International (BICSI)

Where conflicts occur between codes and standards, or between codes and standards and Specifications and Plans, the one establishing the more stringent requirements shall be followed.

2.7 Contract Documents

This document along with the completed Bid Form and Proposal Documents shall constitute the Contract Documents by which performance of work shall be judged. The Owner's consultant shall be the judge of performance regarding all work. Standard AIA contracts between Owner and Contractor will be executed.

2.8 Conformance

The Contractor warrants that all workmanship, materials, and equipment incorporated in this work will be of good quality and in conformance with the Contract Documents.

2.9 Quality Standard

The Contract Documents establish a standard of quality that the Owner has determined to be necessary for the project. It is mandatory that items of material and equipment conform to the Contract Documents and meet the quality standards in every respect.

2.10 Conformity of Work

Execute all work in conformity with best practice to accommodate work to environment and surroundings. Perform all work in accordance with drawings, manufacturer's instructions, shop drawings, this specification, and other Contractors and Vendors.

2.11 Coordinate Locations

Coordinate locations and arrangements of equipment with requirements of all other Contractors, Vendors and Owner. In cases of technical configuration or implementation difficulties, or if simplified installation is made possible by slight variance, bring such conditions to attention of Owner, in writing, via fax, electronic mail, or letter. Changes in arrangements may be made only if authorized by Owner.

Drawings are diagrammatic and indicate the general arrangement of systems and work included in these documents. Final placement and arrangement are the responsibility of the Installing Contractor.

2.12 Work Definition

Below is an outline of specific work the Contractor shall be responsible for performing:

- Project Management
- Systems Engineering
- Construction Scheduling
- Installation
- Configuration
- Testing
- Documentation
- Owner Orientation or Training

2.13 General Duties

2.13.1 Supervision

The Contractor shall plan, direct, supervise, coordinate, and perform the work.

2.13.2 Owner Policies and Procedures

1. A no smoking policy is in effect at all times for all areas on school property.
2. The consumption of drugs or alcoholic beverages by the Contractor's employees, or any subcontractor's employees, shall be prohibited on the Owner's property. The Contractor shall remove from the site, any employee or employee of a subcontractor, who is vulgar, offensive, or who is under the influence of drugs or alcohol.
3. Firearms, knives, and any other weapons are not allowed on school property. This includes weapons stored in vehicles parked on St. Joseph Public Schools property.

2.13.3 Qualified Personnel

Only certified, skilled, dependable persons who meet with the Owner's approval at all times in every capacity shall be utilized.

2.13.4 Product Delivery and Liability

The Contractor shall take responsibility for the delivery and installation of all equipment specified in the Bid Proposal. This shall include loss or damage during shipment or installation. The Contractor warrants that all materials and equipment incorporated in the work shall be new, unless otherwise specified in the Bidding Documents. The Contractor warrants that all materials and equipment incorporated in the work shall be free from faults and defects. The Contractor shall inspect all product shipments for damages and promptly replace damaged product. No damaged product shall be stored on site.

2.13.5 Structural Damage

The Contractor shall replace or repair any damage to structure, finishes, or resulting from work performed by the Contractor. The Contractor shall REPLACE any damaged ceiling tiles.

2.13.6 Incidentals

The Contractor shall provide any incidental material, labor, or detail omitted from the Bid Proposal, yet required by governing codes and standards, local regulations, trade practices, operational functions, or good workmanship, as part of the contract work without extra charge.

2.13.7 Deviations

Deviations from Plans or Specifications shall not be permitted except upon written permission from Owner.

2.14 Project Management

The Contractor shall provide complete project management for all aspects and phases of the project, including the following:

2.14.1 Project Manager

The Project Manager shall be experienced. He/She shall have managed at least three similar projects of similar scope. The project manager shall be authorized to make decisions on behalf of the company. The project manager shall inspect work and direct the crew on an on-going basis.

2.14.2 Planning and Management

Building work shall be coordinated with the construction manager, Owner's technology consultant and/or the Owner's representative.

2.15 Time and Scheduling

2.15.1 Owner Possession

It is the intention of the Owner to take possession of the Work by the established completion date or earlier, within the shortest time possible consistent with good construction practices.

2.15.2 Schedule of Work

Upon award of the contract, the Contractor shall meet with the Owner to prepare an agreed upon schedule of work. This schedule shall provide the Owner with dates upon which stages of the work may be reviewed or inspected. The Contractor shall keep the Owner informed at all times of any modifications to the agreed upon schedule.

2.15.3 Delay of Work

If the work is delayed through the fault of the Owner (or of any separate contractor employed by the Owner or of any condition by the Owner beyond the Contractor's control) the schedule may be extended within a period agreed upon by the Owner and the Contractor. The Contractor shall notify the Owner, in writing, of any condition or situation that in the Contractor's opinion warrants an extension of Contract Time.

2.15.4 Time Extension

The Contractor shall not be entitled to additional compensation or damages due to delays, interference's or interruptions to the Work or the Project, but shall be entitled only to an appropriate extension of time in accord with the General Conditions of the Contract for Construction.

2.16 Contractor Inspection of Work

The Contractor shall promptly facilitate inspection and testing of the Work regardless of expense as necessary or as requested by the Owner, regardless of whether or not the Work in question is his own or that of a subcontractor. The costs for such tests or inspections shall be born as follows:

2.16.1 Contractor Deficiencies

If such tests or inspections reveal deficiencies as measured by Construction documents or an independent consultant/testing agency, the Contractor shall bear all costs incurred to correct such deficiencies, including the cost of testing and inspection, and the cost to reconstruct any work by testing or inspection or by the correction of any deficiency.

2.16.2 Other Deficiencies

If such test and inspections do not reveal deficiencies attributable to the Contractor, the Owner shall bear all costs incurred including the cost of testing and inspection, and the cost of reconstruction. Contracts shall be modified by Change Order to reimburse the Contractor for costs.

2.17 Inspection of Work

The Owner's Consultant will inspect and "punch" the project. The Contractor is responsible to correct any issues brought forth at no additional expense to the Owner.

Retainage, as presented in this document, will be dependent on complying with the final "punch out" list.

Additional trips by consultant required to re-punch items found unsatisfactory at final inspection may occur additional charges. These charges will be deducted from final retainage balance.

2.17.1 Deficiencies

The Contractor shall replace, repair or otherwise correct all deficiencies in the Work during the construction of the Project, within two years after the date of substantial completion, within the time period prescribed in any special warranties and guarantees, and any longer period prescribed by law.

2.17.2 Owner Option

The Contractor shall expediently correct all deficiencies brought to his attention in writing by the Owner or Owner's Consultant. If, in the opinion of the Owner, the Contractor fails to correct deficiencies, or fails to act expeditiously to correct deficiencies, the Owner may:

2.17.2.1 Accept Deficiencies

Accept the deficiencies in the Work, and reduce the Contract Sum of the Contractor at fault by a unilateral Change Order issued and signed by the Owner in an amount to be determined by the Owner.

2.17.2.2 Deficiencies Removed

Have the deficiencies removed in any reasonable manner available to the Owner, and charge the Contractor at fault for the costs incurred, or reduce that Contractor's Contract Sum by a unilateral Change Order issued by the Owner for the costs incurred.

2.18 Cost of the Work

The Contractor shall pay all costs of the Work including, but not limited to, labor, materials, equipment, tools, transportation, freight, taxes, royalties, patent fees, support facilities, construction equipment, water, heat, utilities, supervision, overhead, and all other items necessary for the proper execution and completion of the Work.

2.19 Legal Compliance

The Contractor shall comply fully with all laws, statutes, ordinances, rules, regulations, codes, and lawful orders applicable to their work, including employment regulations, unless specifically exempted from compliance by the Contract Documents. Where local codes differ from codes of broader jurisdictions, the more stringent code shall apply. The Contractor shall promptly notify the Owner in writing, of items in the plans or specifications for this project that violate any applicable codes.

2.20 Permits

Unless otherwise specifically stated in the Contract Documents, the Contractor shall apply for, secure, and pay for all permits, licenses, and fees. The Contractor shall schedule, conduct or perform all tests, and give all notices required by governmental units for the Work of his Contract.

2.21 Site Housekeeping

The Contractor shall be responsible for his own site housekeeping and clean up of any waste generated in the execution of his Work. Unless otherwise specified, the Contractor is responsible for suitable off-site disposal of their waste and debris.

2.22 Cleanup

Clean all equipment at time of substantial completion including the interiors and exteriors of all cabinets, furniture, and equipment enclosures. Clean out all debris and rubbish related to the installation of all components for all work locations within the building. All equipment shall appear in first class new condition.

2.23 Cutting and Patching

Do all cutting and patching necessary for installation of work with approval of the Owner. Do not impair strength or function of work being cut or patched, e.g., do not weaken structural members; maintain watertight integrity where necessary. Use rotary type drilling tools and concrete cutting saws to cut concrete and masonry walls. Use rotary type drilling tools to cut cabinets where knockouts are not available and cable access is required. Do not use torches for cutting metal.

2.24 Firestopping

Provide firestop as required at all penetrations through fire rated or smoke rated walls, floors, or other surfaces. Replace or reinstall firestop material on all existing penetrations where others have installed firestop.

2.25 Coordinate Schedule

The Contractor shall conduct all work in coordination with the schedule of construction published by the Construction Manager.

The Contractor shall adhere to any and all conduct requirements of the Owner, Owner's Representative, or Construction Manager. It is the contractor's responsibility to familiarize staff with any conduct requirements and adhere to the requirements.

2.26 Attendance at Meetings

The Contractor shall be responsible for attending all meetings as required by the Owner, Technology Consultant and Construction Manager.

2.27 Installation

The Contractor shall adhere to manufacturer's specifications during installation of all hardware.

2.28 Review of Documentation

Upon completion of work, the Contractor shall meet with the Owner to deliver and review system documentation, including test results. The work shall not be considered complete until the Review of Documentation has been completed.

2.29 Acceptance

All construction and installation work shall be done in a thorough and workman-like manner in accordance with the Plans, Specifications, and Construction Drawings and shall be subject to acceptance by the Owner.

2.30 Payment

2.30.1 Submission of Invoice

Requests for payment must be received by Secant Technologies before the 8th day of the month. **AIA form G702/G703** must be used. Provide three notarized copies of each pay application for approval. The contractor's request for payment will be processed the following month after it is received.

Contractor will not be paid if Certificate of Insurance has not been provided prior to submission of G702/G703 forms. Additionally, if Contractor wishes to request payment for Stored Materials, an additional Certificate of Insurance for these materials must be included with the pay application stating that Stored Materials are insured . This certificate must indicate the dollar amount and type of materials stored and where they are stored, including verification (photos with denotation of project, bill of landing, etc).

2.30.2 Retainer

Ten percent (10%) of all invoices will be retained. Retained amount will be paid within 60 days of final acceptance.

3 Project Overview

3.1 Introduction

St. Joseph Public Schools is soliciting bids from qualified bidders for the following bid packages:

- Structured Cabling
- Audio Visual Systems
- Interior Digital Signage System (to be bid as part of Audio Visual Systems)
- Loose Audio Visual Equipment
- Clock/Bell/Paging System
- Access Control System
- Surveillance Camera System
- Intrusion Alarm System

St. Joseph Public Schools will award bids to one or more vendors to obtain a final outcome that is in the best interest of the district. Primary contractors may use subcontractors to provide a total solution. All subcontractors must be disclosed and all subcontractors must complete separate Company Information forms and Reference forms.

Each package must be bid in its entirety with the exception of Loose Audio Visual Equipment, where partial bids will be accepted.

3.2 Work Sites

- St. Joseph High School
- 2521 Stadium Drive
- St. Joseph, MI 49085

3.3 Project Schedule

Work will begin March of 2012 and will be completed in approximately six phases, the final phase being completed approximately December of 2013. Contractors are required to attend all construction meetings and to coordinate phasing of all work with other trades.

3.4 Temporary Work Required

Contractors shall be responsible for all temporary work required, due to construction phasing, to keep both existing and new systems operational in occupied areas of the facility.

3.5 Preorder and Storage of Equipment

Equipment will be installed in phases over an 18 to 20 month period as areas of the building are turned over to the owner and become occupied. Contractors shall purchase all active equipment devices at the start of the project to insure that all systems installed over the term of the project utilize the same models of equipment. Contractor shall store equipment at their facility until installed. Contractor must provide proof of insurance for all stored equipment

3.6 Electrical & Low Voltage Rough-ins

The Electrical Contractor will provide electrical and low voltage rough-ins for the majority of the building. However, the Gym and Field House are outside of the construction contract and each Technology Contractor shall provide any rough-ins required for their systems. Should high voltage electrical work be required Technology Contractor shall subcontract a licensed electrical contractor to perform require work.

3.7 Sufficient Manpower

Contractor shall provide the sufficient skilled manpower to complete all work on schedule and according to project phasing requirements, including working additional shifts, weekends and holidays as required. All labor costs, including second shift, weekend and holiday shall be included in the base proposal. Owner will not approve additional labor charges.

3.8 Prevailing Wage

Prospective Contractors for this project shall adhere to guidelines set forth by the most current Berrien County, MI Prevailing Wage Rate Schedule. Information regarding Prevailing wage guidelines has been released as part of this RFP. (See SJPS 2344A Prevailing Wage Document 1-20-12_R.pdf)

3.9 Employee Background Checks

All employees of contractors or sub-contractors that will be working on site at any St. Joseph Public Schools Building must have a criminal background check on file.

The background check shall include a Misdemeanor, Felony and Federal Criminal check, as well as a Sexual Offender check. These checks can be administered by a government agency or by a private company and will be acquired at the contractor's expense. The background check results shall be maintained by the contractor, and names of the candidates who have passed the background checks, submitted to the Construction Manager, Owner, or Technology Consultant if requested. All costs for background checks are the sole responsibility of the Contractor.

3.10 Cable Fire Rating

All in-wall or above-ceiling cabling installed on this project shall riser rated.

3.11 Contact

All inquiries for this RFP should be in writing and can be faxed or e-mailed to:

Melissa Miller
Secant Technologies
Fax: 269-375-4222
E-Mail: mmiller@secantcorp.com

3.12 Owner's Technology Consultant

St. Joseph Public Schools has contracted with Secant Technologies to provide design and project management services for the technology included in this RFP. Contractor will be responsible to coordinate all design and installation details with Owner's Consultant, Secant Technologies.

3.13 Pay Application Process

All applications for payment must be submitted by Contractor using AIA Forms G702 and G703. Forms MUST be sent directly to:

Secant Consulting
Project: SJPS 2344A
6395 Technology Ave.
Kalamazoo, MI 49009

Or e-mail to:
payapplications@secantcorp.com

Failure to follow these instructions will result in delay of payment.

3.14 Construction Management Firm

Owner has contracted with Shelton Construction as the Construction Manager for the work at St. Joseph High School. Contractor will be responsible for coordination of all work with the Construction Manager during planning and installation process. This coordination effort shall include attendance of regularly scheduled construction meetings conducted by the Construction Manager.

3.15 Warranty

All hardware, equipment, jumpers, patch cords, as well as all workmanship and labor, will be warranted for a period of not less than one (1) year.

All warranties will begin immediately following final acceptance of the completed project, as determined by the Owner.

3.16 General Installation

The Vendor will be responsible to furnish, set in place, and install all equipment, unless otherwise noted. The installation process includes, but is not limited to the following:

Receive all equipment on behalf of the Owner.
Provide inventory receipt of all equipment to Owner.
Store all equipment until the equipment is installed according to specifications.
Transport devices and all components to designated locations.

Cable and configure all components as needed.
Complete control system programming as specified.
Demonstrate successful installation.
Maintain inventory and status documents and discard all trash packaging at locations designated by the Owner.
Asset tagging of any/all equipment as required by Owner.
Owner Orientation and Training.

3.16.1 **Asset Tagging**

Owner will provide asset tags for major equipment components. Vendor shall affix tags to equipment as instructed by owner and shall maintain an asset tag worksheet that records the type of equipment, serial number and installation location for all items tagged. Asset tagging shall be coordinated with the SJPS Technology Department Administrative Assistant.

3.16.2 **Workmanship**

All work shall have a finished appearance. The contractor shall supply and repair / install all trim, covers, fixtures, carpet, ceiling tile, paint, hardware, brackets, etc., as needed.

3.16.3 **Floor Plans and Diagrams**

The floor plans and diagrams provided with this document are considered part of this specification document.

3.17 **Proposal Format**

3.17.1 **Bid Forms**

All bidders submitting a response to this RFP must complete all bid forms provided. At least three references must be provided on the Technology Reference form. Bid forms are available in Microsoft Word format upon request. References shall be for projects of similar size and functional scope.

3.17.2 **Executive Summary**

Bidders should include an executive summary that gives an overview of their response. Please include any pertinent information not specifically asked for on the bid forms.

3.17.3 **Material Lists**

Include a detailed Materials List for each section of your response. It is important that all items are listed. It will not be assumed that items are included, unless they are specifically listed. Material Lists shall include line item pricing and model numbers for all major components, cables and labor.

3.17.4 **Diagrams**

Some specific sections require diagrams. Please review each specific section for stated diagram requirements. If noted, failure to provide diagram may disqualify your bid. In addition, signal flow diagrams are required for proposed solutions that do not exactly match the systems specified in the included system riser diagrams.

3.17.5 **Cut Sheets**

Include manufacturer cut sheets for key components used in your design. Cut sheets are not required for items that exactly match the specified models in this RFP.

3.17.6 **Voluntary Alternates**

Voluntary alternates are welcomed. For each alternate, provide a detailed materials list (including line item pricing), cut sheets, and executive summary explaining your alternate design and its benefits.

3.18 **Bid Evaluation**

It is the intent of the Owner to select the bid response that provides the greatest long-term value to the Owner. This may not be the response with the lowest initial purchase price. The following factors will be used to evaluate and award this project:

- Completeness of response, including detailed line item parts list with itemized pricing
- Provides lower long-term cost of ownership
- Vendor's experience with similar projects
- Expertise and certification of vendor's staff

Vendor's references

Flexibility of solution to expand and change over time

Initial purchase price

3.18.1 **Bid Award**

Owner will, at its sole discretion, award the project(s) to a vendor or vendors of its choice. Owner may elect to not award any or all sections of the RFP. Owner reserves the right to increase or decrease all quantities by 25 percent in the final award. Owner reserves the right to award individual sections to different vendors.

Bidder, by submitting bid, agrees to honor line item individual component pricing submitted on bid forms for the final quantity determined by Owner. Owner may elect to eliminate any individual line item or combination of line items contained on bid forms prior to contract award. Bid prices must be honored for 90 days from the bid due date.

4 General AV Specifications

The specifications below shall apply to all Audio/Visual projects specified in this document unless stated otherwise in a specific project section.

4.1 System Diagrams

Refer to the provided diagrams for details of each AV system. Refer to provided floor plans for location of equipment in each area.

4.2 Vendor Qualifications

The successful Contractor will show past experience in designing and installing systems of this size and type. The Contractor shall not subcontract any of the systems in this specification without first obtaining written permission from the Owner.

4.3 General Installation

The Vendor will be responsible to furnish, set in place, and install all equipment, unless otherwise noted. The installation process includes, but is not limited to, the following:

- Receive all equipment on behalf of the District.
- Provide inventory receipt of all equipment to Owner.
- Store all equipment until the equipment is installed according to specifications.
- Transport devices and all components to designated locations.
- Cable and configure all components as needed.
- Complete control system programming as specified.
- Demonstrate successful installation.
- Maintain inventory and status documentation and discard all trash packaging at locations designated by the district.
- Asset tagging of any/all equipment as required by Owner.
- Owner Orientation and Training.

4.4 Signal Quality

Reproduction of video and audio signals by systems shall be clear and without noticeable hum, noise or other distortion.

4.4.1 Speaker Coverage

Speakers shall be aimed to provide appropriate coverage for spaces in which they are installed. Relative volume levels of speakers are to be adjusted to provide consistent volume levels for the audience seating area of the space.

4.4.2 Equalization

Adjust equalization settings to accommodate room acoustics using reference signal and spectrum analyzer or other industry accepted test equipment.

4.4.3 Input Levels

Adjust and balance input levels of each source to provide consistent levels between all sources.

4.4.4 EDID/HDCP Compliance

All electronics shall properly communicate EDID (Extended Display Identification Data) information to ensure proper display resolution. If required, EDID emulation electronics shall be utilized to ensure EDID standards conformity. For electronics that utilize HDCP (High Definition Copyright Protection), all digital interconnect cables, adapters or other electronics shall support HDCP v1.3 (or the latest applicable version at time of bid response). Proper HDCP and EDID digital communication shall be maintained between components.

4.5 Cable Specifications

4.5.1 VGA Cables

VGA Cables shall be 5-conductor cable rated for WUXGA (1920 x 1200) resolution signals. The cable shall provide five 75-ohm coax conductors for RGB, H and V video signals. Cables shall be terminated with factory-made HD-15 connectors.

4.5.2 **Composite Video Cable**

Composite video cable shall be 75-ohm dual-shield coax cable. Terminations shall be with yellow color-coded RCA connectors or BNC. Cables shall be terminated with factory-made RCA connectors.

4.5.3 **S-Video Cable**

S-video cable shall be dual 75-ohm coax cable. Terminations shall be with factory-made Din-4 connectors.

4.5.4 **Audio Cable**

Audio cable shall be single pair 22 AWG stranded wire with shield and drain wire.

4.5.5 **Speaker Cable**

Speaker cable shall be single pair 18 AWG stranded wire. All speaker cable shall be plenum-rated.

4.5.6 **Skew-Free UTP**

Skew-free UTP shall be utilized where required to maintain signal integrity. Follow manufacturer guidelines for cable type based upon electronics manufacturer distance specifications. Where skew-free UTP is required by transmission distance and/or application, cable shall be Belden Brilliance 7987(P or R as needed for plenum rating) or equivalent.

4.5.7 **Cable Construction**

All system cables shall be professionally assembled using factory connectors. Connectors must be properly sized to match the installed cable and must match the smoke rating of the cable.

Cables are to be constructed with only the length needed to provide connections between system components and to provide appropriate slack to allow installation and removal of equipment for service.

4.5.8 **Cable Installation**

All system cables shall be sized to provide connection between system components with appropriate slack to allow installation and removal of equipment for service. All cables will be neatly dressed into rack and secured with tie wraps or Velcro cable ties. Cables interconnecting technology racks to wall plates/entrances shall be cable-socked and of sufficient length to allow removal of racks from casework for service.

4.5.9 **Cable Labeling**

Each end of installed system cables will be labeled for easy identification and tracing. Labels shall be Brady self-laminating cable-wrap labels or equivalent. Machine printed labels are required.

Cable labels shall reflect the Cable IDs shown on final system as-built drawings.

4.5.10 **Patch Cables**

Contractor is to provide all required patch cables to complete connections of equipment to the system. This includes audio cables, video cable, VGA cables, and data cables for both Contractor and Owner-supplied equipment. Cable length must be suitable to the installed location. Cables that are too short or excessively long will be replaced at the Contractor's expense.

4.6 **Cable Pathways**

In general, wall boxes, floor boxes, conduit stubs, and corings required to support the audio systems have been provided by the electrical contractor. However, the AV contractor may be required to install raceway or corings on an ad hoc basis to complete wiring of their systems.

4.6.1 **Shared Pathways**

AV cables will share pathways and boxes with other contractor's cables. Coordinate activities with other contractors to avoid over filling tray, sleeves and raceways.

AV contractor shall take all steps necessary, during the pulling of their cables, to avoid damage to existing cables installed by other contractors. Any damaged cables shall be replaced at AV contractor's expense.

4.6.2 **Cable Routing**

All cable is to be concealed, either installed above drop ceilings, in access tunnels or in surface raceway. Tele/Power poles may be required to route cable to freestanding computer equipment. No exposed cable is allowed.

Installation methods must follow TIA/EIA-568A standards including cable support, pulling force, minimum bend radius and minimum distance from sources of electrical interference.

4.6.3 Exposed Cables

Where open ceilings exist, all cable shall be concealed by running on the top of trusses, in conduit or in raceway. Cable shall be painted to match the color of the trusses.

4.6.4 Ceiling Boxes

Where ceiling mounted speakers and microphones are to be installed in open ceilings, it is the responsibility of Contractor to provide and install conduit and boxes for this equipment where required. Boxes and associated conduit shall be painted to match the color of ceiling and trusses as required.

4.6.5 Surface Raceway

Wherever possible, use of surface raceway is to be avoided. **Contractor must always consult with owner for approval prior to installing surface raceway.**

Raceway manufacturer and color shall match any existing raceway installed in the building. Panduit LD5, LD10 and T70 raceway is preferred in areas where no existing raceway must be matched. Coordinate color choice with owner. Raceway should be sized to maintain a fill ratio of 50% or less.

All raceway fittings for inside and outside corners and drop ceiling fittings must be designed to maintain a minimum 1-inch cable bend radius.

All raceway and surface boxes shall be installed using anchors or screws. Adhesive mounting is not acceptable.

4.6.6 Cable Tray

Cable tray shall be GS Metals "Flextray" or equivalent, continuous, rigid, welded steel, wire mesh, cable management tray, as indicated on prints.

Install and support cable management system in accordance with span load criteria of L/240.

Install cable management system using mounting hardware, connectors, support components and accessories furnished by the tray manufacturer.

4.6.7 Cable Fire Rating

Any cable installed into an air plenum must be plenum rated or installed in metallic conduit.

Outdoor rated cables may not be installed in plenum spaces and are limited to 50 feet in riser rated spaces unless installed in metallic conduit.

All cabling on this project shall be plenum rated.

4.6.8 Wall Penetrations

Any new wall penetrations or corings must be provided with EMT sleeves and protective bushings to prevent damage to cable as it is pulled through sleeves. Sleeves shall be secured into corings with concrete mortar or fire rated caulk. The maximum fill for all sleeves shall not exceed 60% of capacity. This will allow sufficient space for fire-stopping material.

4.6.9 Cable Support

Cables must be supported at minimum every five (5) feet. Tie-wraps are not acceptable for cable support. Cable trays and Caddy "J" hooks are the preferred method of cable support.

All above-ceiling cabling shall be supported. No cabling shall lie directly on drop-ceiling grid-work or lighting fixtures

Velcro wraps with a minimum width of 3/8" are acceptable for cable support. Tie-wraps may be used to organize cable as long as they do not deform the cable jacket and are not supporting the weight of the cable.

4.6.10 Fire-stopping

Any penetrations of firewalls must be fire-stopped using a UL approved material to restore the wall to its original fire rating. *Proper fire stopping is not possible if penetrations exceed a 60% fill ratio.* Fire-stopping material must be re-enterable putty to allow for future cable system upgrades.

4.7 Boxes & Faceplates

4.7.1 Custom Wall Plates

All custom fabricated wall plates shall be black aluminum with mechanical engraved ink-filled legends except where noted otherwise.

4.7.2 Custom Rack Panels

Panels shall be black anodized aluminum with mechanically engraved ink-filled legends except where noted otherwise.

4.8 Racks

4.8.1 Rack Shelves

All non-rack mounting equipment installed in racks shall be installed using Middle Atlantic RC series clamping shelves to secure equipment except where noted otherwise.

4.8.2 Loose Equipment

All small components must be secured to rack. Loose, dangling components are not acceptable.

4.8.3 Vent Panels

Provide vented rack panels as needed to allow for proper airflow into and out of racks.

4.8.4 Blank Panels

Provide blank rack panels to fill all unused spaces in rack. Provide blank panels to space equipment, as required, to provide proper airflow for cooling.

4.8.5 Rack Fans

Provide rack exhaust fans in racks where operating equipment causes a heat rise of more than 20 degrees above ambient air temperature.

4.8.6 Security Covers

Provide rack security covers for all equipment not intended for end-user adjustment.

4.8.7 Rack Cabling

Install all required patch cables to complete connections required for system operation. Install all parts and cables in a neat and workman like manner. Neatly organize and dress all cables and secure with tie wraps or Velcro.

Provide strain relief on all cables exiting the rack to protect equipment connections from damage.

Cables in a rack must not be fastened to any casework or other component outside the rack which would prohibit the rack from being removed for service. The only connection between the rack and anything else should be the signal cables exiting the AV system into which the rack is installed.

Label **all** cable ends corresponding to equipment inputs or outputs when appropriate to facilitate reconnection of equipment after servicing.

4.8.8 Power Connections

Provide internal plug strips as required to accommodate power connections for all equipment installed in racks. Provide a minimum 6-foot power cord on plug strip unless otherwise noted. Neatly coil all excess power cord length and secure to rack. Three (3) additional outlets must be left open after installation of all AV equipment to allow for Owner provided equipment to be plugged in.

4.9 Microphones

4.9.1 Microphone Channel Assignments

Vendor shall coordinate the assignment of wireless microphone channels for each system to avoid conflicts with other wireless equipment including any existing client owned microphones.

Where possible, microphone channels are to be locked to prevent accidental reconfiguring of assigned channels.

Final as-built diagrams shall include the assigned channel for all wireless microphone equipment.

This requirement is not applicable for systems using IR microphones.

4.9.2 Microphone Labeling

All wireless microphones and belt packs shall be permanently labeled with the room number or main system they are intended to work with.

Wireless transmitters and receivers shall be permanently labeled with their assigned channel numbers (when applicable) to assist in reconfiguring the equipment should channels be altered.

4.10 Labeling

4.10.1 Control Labeling

All front panel controls shall be permanently labeled indicating their function. The typical setting of all volume and mixing level controls shall be clearly indicated. The name of each source shall be clearly labeled on source selection controls.

4.11 Equipment Control

4.11.1 Controllable Equipment

Equipment that is required to be controllable shall be controllable by RS-232, RS-422, or IR signaling.

4.11.2 IR Controlled Equipment

Any equipment provided, including DVD, VCR and televisions that do not support RS-232, RS-422 or network control shall be controllable using IR codes. Devices must provide discrete codes for all functions to allow for reliable IR commanding. This includes codes for power-on, power-off, selection of input source and other operating modes. Any equipment installed that cannot be reliably controlled, will be replaced at Contractor's expense.

4.11.3 Networked Equipment

System devices that require an Ethernet network connection shall utilize TCP/IP protocols. Configuration of IP settings shall be coordinated with owner to match owner's existing IP addressing system. All devices that are to be remotely managed shall have static IP configuration including:

- IP address and subnet mask
- Default gateway
- Primary and secondary DNS server address

Label all IP connected equipment with their assigned IP address and subnet mask. Labels shall be machine printed.

4.11.4 E-mail Alerts

Networked equipment that is capable of generating e-mail status messages must be configured to utilize owner's SMTP mail server and owner provided e-mail address.

4.11.5 Projector Auto-shutdown

Data projectors shall be configured to perform an automatic shutdown after five minutes of operation with no source signal being detected on any input.

4.12 Project Close-out Requirements

4.12.1 Demonstration

Upon completion of installation and prior to final acceptance, the Contractor will be required to conduct a demonstration of the AV systems for designated Owner Representative.

Demonstration shall be conducted under "real life" conditions. For example, a Gym sound system shall be tested during an actual game to assess system operation when crowd noise is present.

This demonstration will establish that all components of the equipment are fully operational and meet the intent of this RFP.

Any equipment found to be non-functional is to be repaired or replaced at the Contractor's expense.

4.13 Commissioning

Contractor must notify the Owner or Owner's Representative when work is substantially completed. At this time, Owner's Representative will schedule a project walkthrough with Contractor. At the conclusion of this walkthrough, Owner's Representative will provide a project "Punch List."

Contractor will complete the open items on the "Punch List" and notify Owner's Representative when items have been completed.

Owner's Representative will schedule a second project walkthrough.

If any "Punch List" items remain open at the conclusion of the second walkthrough, Contractor may be charged a per visit fee for any subsequent walkthroughs.

4.14 Documentation Binder

Unless directed otherwise in system bid sections, provide a documentation binder for each system containing:

- Copies of all equipment manuals
- Copies of all equipment warranty agreements
- Inventory records in Microsoft Excel format for all equipment including classroom AV, other space AV systems and hallway and office TVs stating:
 - Manufacturer, part number, serial number and installation location for all active components of the system.
- Final as-built system diagrams - printed and on CD-ROM
- Source code for custom programming on CD-ROM

4.14.1 As-built drawings

As-built drawings must be created in CAD software and must provide a cable ID for each internal system cable that matches cable ID placed on the installed cable. Provide as-built diagrams in printed form and as .PDF or .DXF files on CD-ROM.

4.14.2 Custom Programming

Any systems that utilize electronically stored parameters or that utilize programmed controllers from AMX, Crestron or others, must include the following items in the documentation binder stored on CD-ROM:

- Record of all device IP addresses
- Record of all device passwords
- Copies of programming tools
- Copies of all programs in human readable source format
- Copies of all electronically configured parameters
- Programming source code on CD-ROM

5 General AV Control Specifications

The specifications below shall apply to all Audio/Visual projects that utilize control systems specified in this document unless stated otherwise in a specific project section.

5.1 AV Control Hardware

5.1.1 Approved Manufacturers

The following control equipment is approved for advanced systems that require custom programming, multi-function event configuration, time and date driven events, and/or complex bi-directional RS232 communication.

AMX

5.1.2 Factory Authorized

Vendor must be factory-authorized, factory-direct reseller/integrator for control system and as such be capable of acquiring direct technical support from the control system manufacturer.

5.1.3 Programming Certification

Vendor shall have a minimum of the three years experience creating AV control systems.

Vendor must have a minimum of one staff member with high-level manufacturer programming certification on staff. The Vendor's on-staff, manufacturer-certified programmer must have current certification and work from Vendor's service facility located within 90 miles of Owner facilities. Vendor's certified-programmer may be required to physically visit Owner facilities for initial programming or follow-up programming changes as required by Owner or Technology Consultant. The certified programmer shall not be a sub-contractor to the installing AV contractor.

Programming Certification is only required for controllers that require conditional logic programming or if manufacturer requires a manufacturer-certified programmer for future system changes. If the control system that is bid does not require complex programming and is fully configurable in the future by a Owner technician, without knowledge of programming, then the requirement for Programming Certification may be waived at the discretion of the Owner, and/or Technology Consultant.

5.1.4 Equipment Control

All systems shall be capable of controlling equipment using relay contact, IR, RS-232, RS-422 and IP Network connections.

5.1.5 Network Based

The control hardware shall be connected to the building's Ethernet network and shall communicate via TCP/IP. Control systems shall be capable of static or dynamic IP addressing as required by Owner.

5.1.6 Access Control

A method of preventing unauthorized control of the AV system over the IP network must be provided.

5.1.7 Control Methods

The control system must be able to receive commands from wired button panels, dedicated touch screens, wireless touch screens, and IP networked computers.

5.2 Computer Control

Control System shall be capable of being controlled via a browser-based interface.

5.2.1 Platforms Supported

The control system must be usable by computers running Windows 2000, Windows XP, Windows Vista, Windows 7, Linux and Apple Macintosh OS X.

5.3 Control System Button Layout

Coordinate final layout of controller buttons with Technology Consultant prior to programming and controller configuration.

5.3.1 Programming Logic

The Contractor will be required to provide a programming logic design to Technology Consultant for approval prior to programming development. Programming logic flowchart and/or graphical storyboard will be required.

5.4 Design Guidelines

5.4.1 Single Function Buttons

Buttons that perform more than one function are discouraged. For example a FORWARD button that skips to the next track when pressed once and performs a scan forward when held down is discouraged. Rather, two dedicated buttons, one for chapter forward, and one for scan forward is preferred.

5.4.2 Button Icons

Commonly recognized icons, such as PLAY, STOP, REWIND, etc., may be used on buttons but an English language function description should also be provided below the buttons.

5.5 Design Approval Process

Because of the importance of the AV Control Systems, the selected contractor will be required to submit the control system programming to the review and approval process outlined below.

5.5.1 Design Approval

Contractor will submit a design mockup showing their intended user interface design. This may be in the form of diagrams, flowcharts or as screen mockups created using the AV Control System programming environment.

Programming of the system will not start until the owner has approved the design mockup.

5.5.2 Prototype Approval

Contractor will demonstrate a working prototype of the AV1 Classroom AV suite complete with control system. The owner and contractor will review all system functions and document any required control system changes.

Final system installation will not start until the owner has approved the prototype classroom system.

5.5.3 Punch List Approval

Owner's consultant will perform a final punch list inspection of all installed AV control systems. Final retainage will not be paid until any identified punch list issues are resolved.

5.5.4 Final Adjustments

Owner and AV Contractor will solicit feedback from system users after no more than six months of system usage. Contractor agrees to perform any minor control system updates that may be required based on this feedback.

5.5.5 Source Code

Contractor shall provide owner with all control system programming source code in electronic format on CD-ROM. Contractor will grant owner full rights to modify, update, and reuse the control system software for use by the district.

5.6 Common Control System Features

The features described below will be incorporated into all control systems unless noted otherwise. These features shall be incorporated into computer based and touch screen based control systems.

5.6.1 Microphone Mixing and Muting

The system shall mix microphone audio with the currently selected audio source.

Microphone volume levels shall be adjustable independent of the main audio source.

5.6.2 Manual Override

A manual Projector Power button will allow the operator to turn the projector on or off.

5.6.3 Device Selection

A source selection button will be provided for each available AV source. A combination device such as the DVD/VCR player will be treated as two separate devices to simplify user screens.

5.6.4 **AV Source Selection**

Selecting a source will set both the audio source and video source. For audio only devices the projector will be powered off. For video only devices all audio inputs will be muted with the exception of microphones.

5.6.5 **Device Controls**

Once a device is selected, the screen will display only the controls specific to that device. For non-controlled devices, the screen will display user instructions specific to the selected device.

5.6.6 **Control Functions**

Control functions effect the overall operation of the system and do not change the selected AV source. Control functions should be available to the user at all times.

5.6.7 **System Off**

Power down all controlled system equipment as appropriate and exit control software.

5.6.8 **Projector On/Off**

Allow separate power on or off of the data projector overriding the system's automatic power on and off functions.

5.6.9 **Audio Mute**

Mute audio source and display a status message indicating the system is muted. A second press of Audio mute will disable mute. Selecting any other system control function will disable mute.

5.6.10 **Video Mute**

Black projector screen, mute audio source, and pause DVD or VCR if currently playing. Display a status message indicating video mute is active.

A second press of Video mute will disable audio and video mute. Selecting any other system control function will disable Video mute.

5.6.11 **Volume Control**

Allows the volume, of the currently selected source, to be adjusted up or down. Volume settings are source specific and are to be retained for each source. For example, adjusting the volume up for the DVD, does not affect the volume for the main computer. When a new source is selected its last volume level will be automatically restored.

5.6.12 **Projector Warm-up**

The system will display a status message during projector warm-up and will lock all system controls until the projector is ready. The system will not attempt to issue commands to the projector until it is ready to receive them.

6 AV1 – Typical Classroom AV Systems

6.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

General AV System Specifications

6.2 Drawings

6.2.1 Floor Plans

Refer to floor plans for locations of AV1 systems.

6.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

6.3 Existing Conditions

6.3.1 Ceiling

Classroom ceiling are generally lay-in “drop” type. Contractor will be responsible to verify ceiling types in all rooms and provide and install components accordingly.

6.4 System Details

6.4.1 Items Provided by Others

Others will provide major system components and most patch cables for the system. Contractor must pay special attention to which components are to be provided and/or installed by the successful AV Contractor. Refer to system riser diagrams and shading key to determine which components must be provided and installed.

6.4.2 Equipment Transport

Contractor shall pickup from owner storage facility and transport to work site all equipment provided by others.

6.4.3 Teacher Station

Each classroom is provided with a mobile teacher station location that will be cabled to the classroom rack location with a cable-socked umbilical. Teacher tables must be placed in rooms, components added and configured, and operation verified by the AV Contractor.

6.4.4 Classroom Rack

Classroom rack (shown as “CR” on associates drawings) shall be a wall mounted Hoffman 16” x 16” x 6” box. Hoffman box shall be provided and installed by the Electrical Contractor. AV Contractor shall install and connect CR module provided by others. Lightspeed receiver/amplifier shall be mounted to the inside of the front door of Hoffman box using supplied mounting bracket.

6.4.5 Display and Mount

The display device shall be an Epson BrightLink 450Wi projector. The AV contractor is required to perform all configuration/setup of this projector including, but not limited to, all LAN configurations, eco mode, adjust auto power on/off parameters, and adjust video parameters to optimize viewing. Interconnect cabling is to be neatly managed inside the mount and enclosure.

Mount projector to provide largest possible image on interactive board surface.

6.4.6 T45 Raceway

Contractor shall provide and install Panduit T45 raceway to provide a cable pathway between Hoffman Box and Epson projector mount. Field cut openings as required in Hoffman box and projector mount cover to accommodate routing of cables.

6.4.7 Projector Interactivity

Contractor shall install interactive components in each classroom as provided by Others. Complete connections to AV system align and calibrate interactive board.

6.4.8 Microphone

Voice amplification shall be provided by a LightSpeed IR microphone system as noted on the riser diagram. Contractor shall install and interconnect amplifier, speakers, IR sensor, two microphones and microphone charging base.

6.4.9 Document Camera

A document camera will be provided by Owner and must be integrated by the AV Contractor. AV Contractor will be responsible for setting document camera in place on teacher table, inventorying serial number by room, attaching video and power cable, and verifying correct operation.

6.5 Testing

Contractor shall perform a final system operation test using a Microsoft Excel based check list provided by technology consultant.

6.6 Documentation Binders

Provide three documentation binders.

6.7 Training

Provide two 2-hour teacher-training sessions on system usage. Coordinate training dates/times with District Administration.

7 AV2 – Science Room AV Systems

7.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

General AV System Specifications

7.2 Drawings

7.2.1 Floor Plans

Refer to floor plans for locations of AV2 systems.

7.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

7.3 Existing Conditions

7.3.1 Ceiling

Classroom ceiling are generally lay-in “drop” type. Contractor will be responsible to verify ceiling types in all rooms and provide and install components accordingly.

7.4 System Details

7.4.1 Items Provided by Others

Others will provide major system components and most patch cables for the system. Contractor must pay special attention to which components are to be provided and/or installed by the successful AV Contractor. Refer to system riser diagrams and shading key to determine which components must be provided and installed.

7.4.2 Equipment Transport

Contractor shall pickup from owner storage facility and transport to work site all equipment provided by others.

7.4.3 Teacher Station

The Science Room teacher location is at the presentation casework. The standard presentation table equipment tray from the AV1 system must be integrated into the casework which is provided and installed by Others. Cable tails must be routed through grommets to the work surface with sufficient length.

7.4.4 Classroom Rack

Classroom rack (shown as “CR” on associates drawings) shall be a wall mounted Hoffman 16” x 16” x 6” box. Hoffman box shall be provided and installed by the Electrical Contractor. AV Contractor shall install and connect CR module provided by others. Lightspeed receiver/amplifier shall be mounted to the inside of the front door of Hoffman box using supplied mounting bracket.

7.4.5 Display and Mount

The display device shall be an Epson BrightLink 450Wi projector. The AV contractor is required to perform all configuration/setup of this projector including, but not limited to, all LAN configurations, eco mode, adjust auto power on/off parameters, and adjust video parameters to optimize viewing. Interconnect cabling is to be neatly managed inside the mount and enclosure.

Mount projector to provide largest possible image on interactive board surface.

7.4.6 T45 Raceway

Contractor shall provide and install Panduit T45 raceway to provide a cable pathway between Hoffman Box and Epson projector mount. Field cut openings as required in Hoffman box and projector mount cover to accommodate routing of cables.

7.4.7 Projector Interactivity

Contractor shall install interactive components in each classroom as provided by Others. Complete connections to AV system align and calibrate interactive board.

7.4.8 Microphone

Voice amplification shall be provided by a LightSpeed IR microphone system as noted on the riser diagram. Contractor shall install and interconnect amplifier, speakers, IR sensor, two microphones and microphone charging base.

7.4.9 Document Camera

A document camera will be provided by Owner and must be integrated by the AV Contractor. AV Contractor will be responsible for setting document camera in place on teacher table, inventorying serial number by room, attaching video and power cable, and verifying correct operation.

7.5 Testing

Contractor shall perform a final system operation test using a Microsoft Excel based check list provided by technology consultant.

7.6 Documentation Binders

Provide three documentation binders.

7.7 Training

Provide two 2-hour teacher-training sessions on system usage. Coordinate training dates/times with District Administration.

8 AV3 – Food Lab AV System

8.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

- General AV System Specifications
- General Control System Specification

8.2 Drawings

8.2.1 Floor Plans

Refer to floor plans for locations of AV3 system.

8.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

8.3 Existing Conditions

8.3.1 Ceiling

The Food Lab ceiling is a lay-in “drop” type ceiling. Contractor will be responsible to verify ceiling types in all rooms and provide and install components accordingly.

8.4 System Details

8.4.1 Equipment Transport

Contractor shall pickup from owner storage facility and transport to work site all equipment provided by others.

8.4.2 Classroom Rack

Classroom rack shall be a Middle Atlantic Slim5-17 low profile equipment rack mounted inside casework which is provided by others. Due to limited space in the casework, system component mounting must be planned and executed in the most efficient way possible.

8.4.3 Display and Mount

There are three purposes for display devices in this room. The first is a confidence monitor for the instructor and will be mounted at the instruction island in the middle of the room. This monitor will mirror content sent to other displays. The second is large-format presentation monitors for the seated classroom area. The last are smaller form factor monitors at each of the cooking stations for students to view material from the instructor.

Each monitor must be mounted securely. Contractor is responsible for field verifying screen locations and mounting conditions.

8.4.4 Microphone

Provide wireless handheld microphone and wireless bodypack transmitter with lavalier microphone. Microphones shall be on the same channel and will not be able to operate simultaneously.

8.4.5 Overhead Camera

An overhead camera will be provided and installed by AV Contractor. Camera preset positions must be set by AV Contractor and must be recallable in the control system interface. Examples would be a preset that frames the image over the cooktop, prep area, or sink.

8.5 Testing

Contractor shall perform a final system operation test using a Microsoft Excel based checklist provided by technology consultant.

8.6 Documentation Binders

Provide one documentation binder.

8.7 Training

Provide one 2-hour teacher-training session on system usage. Coordinate training dates/times with District Administration.

9 AV4 – Conference Room AV System

9.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

- General AV System Specifications
- General Control System Specification

9.2 Drawings

9.2.1 Floor Plans

Refer to floor plans for the location of the AV4 system.

9.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

9.3 System Features

Refer to system riser diagram for required equipment models, quantities and cabling.

9.3.1 Input Sources

The following input sources shall be supported by the interactive projector and speakers:

- VGA with stereo audio on the presentation wall
- Composite video and stereo audio on RCA jacks on the presentation wall

9.3.2 Equipment Mounting

In lieu of an equipment rack in this room, a ceiling mounted box will house various components as shown on associated diagrams.

9.4 Documentation Binders

Provide one documentation binder.

9.5 Training

Provide one 2-hour teacher-training session on system usage. Coordinate training dates/times with District Administration.

10 AV5 – Student Commons AV System

10.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

General AV System Specifications

10.2 Drawings

10.2.1 Floor Plans

Refer to floor plans for locations of AV5 system.

10.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

10.3 Existing Conditions

10.3.1 Ceiling

Ceilings in the commons space are lay-in “drop” type. The center sections are individually suspended clouds at approximately 26’ AFF with exposed truss above and the perimeter section is “drop” from edge to edge at approximately 20’ AFF. Contractor will be responsible to verify ceiling types in all rooms and provide and install components accordingly.

10.4 System Details

10.4.1 Audio Reproduction

Audio Reproduction in this space will be by way of overhead distributed speakers mounted in the ceiling tiles. Two zones of audio will be wired with a delay to compensate for time of arrival differences. Volume of the two sections must also be adjusted to meet ACU specifications listed above.

10.4.2 Video Reproduction

The proposed system is entirely digital in its distribution method. As such, EDID and HDCP protocols must be carefully observed and adhered to. It will be the responsibility of the AV Contractor to ensure that all content will play back without restriction on all display devices.

10.4.3 Touch Panels

Two touch panels are required as part of the Commons AV system. Panels will have identical interfaces and must operate in tandem with each panel reflecting changes made from the other in real time. Additionally, web control must mirror the physical touch panels and respond in real time to changes made on the physical panels.

Touch panel programming must conform to all specifications listed above and will be subject to review and approval before implementation.

10.4.4 Motorized Screen

The projection screen for this space will be custom and must conform to the following:

1.5 gain mildew resistant and fire retardant fabric which can be cleaned with a mild soap and water solution

No less than 35 degree off axis viewing angle

2” black masking border

Custom added drop to achieve 6’ AFF to bottom edge of viewing surface

Motorized with low voltage control

Viewing area of 22’ wide by 12’ 4” high

10.4.5 System Modes

The system shall operate in three modes as described below. The user will be able to select the mode from the main system screen. The touch-panel display shall indicate the active mode.

10.4.5.1 Presentation Mode

In presentation mode all flat panel displays will mirror the currently selected image source. The operator can select any image source and shall have controls for volume, audio mute and display mute.

System audio can be set to any source and microphones are active.

Transport control and channel up/down functions shall be available for all devices.

Exiting from presentation mode shall automatically return the system to the mode defined in the system schedule for the current day and time.

The processing of scheduled events is suspended while the system is in Presentation mode.

10.4.5.2 **Presentation Mode Time Out**

The control system shall automatically exit Presentation Mode after a period of 3 hours of inactivity and return to the current scheduled mode. The system will power off if the system scheduled function is currently disabled.

10.4.5.3 **TV Mode**

In TV mode each display can be individually selected to one of the image sources. The current channel settings for each Amino box can be individually set. Direct setting of channel numbers as well as channel up/down shall be provided. The close caption setting of any display can also be individually set.

System audio source can be selected to any source and microphones are active.

The system shall store the last setting used for TV Mode and shall automatically restore settings to all devices when TV mode is next selected.

10.4.5.4 **Signage Mode**

In Signage mode individual displays may be powered on or off. All active displays are feed the output of the digital signage player.

System audio can be set to any source and microphones are active.

The system shall store the last setting used for Signage Mode and shall automatically restore settings to all devices when Signage mode is next selected.

10.4.6 **Scheduling Features**

The control system shall provide a simple internal scheduling system that switches the system between modes at specified times. The system must use the NTP protocol to determine the correct time and date and must auto-adjust for daylight savings time.

The system shall provide a seven-day (Monday thru Sunday) schedule with each day being capable of independent settings.

Each day shall allow up to six events to be scheduled at a specific times. Times shall be settable in 15-minute increments. The possible modes for each event are:

- Enter Signage Mode
- Enter TV Mode
- System off
- No change

The schedule screen shall provide a single button to enabled or disable the processing of scheduled events. This button is typically used over a vacation period to stop automatic schedule without having to clear all of the settings.

10.4.7 **Microphones**

The system will allow for two simultaneous channels of wireless microphones to be used. Each wireless channel will have one handheld and one bodypack with lavalier microphone configured to it as shown in associated drawings.

AV Contractor will be responsible to remote-mount antennas in the space as required for RF reception in any position in the room.

10.4.8 **Power Control**

The control system shall operate a relay controlled power strip to reduce the system power consumption when the system is powered off.

10.5 **Testing**

Contractor shall perform a final system operation test using a Microsoft Excel based check list provided by technology consultant.

10.6 Documentation Binders

Provide one documentation binder.

10.7 Training

Provide one 2-hour teacher-training sessions on system usage. Coordinate training dates/times with District Administration.

11 AV6 – Music Room AV Systems

11.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

General AV System Specifications

11.2 Drawings

11.2.1 Floor Plans

Refer to floor plans for locations of AV6 systems.

11.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

11.3 Existing Conditions

11.3.1 Ceiling

Music room ceilings are generally lay-in “drop” type. Contractor will be responsible to verify ceiling types in all rooms and provide and install components accordingly.

11.4 System Details

11.4.1 Items Provided by Others

Others will provide major system components and most patch cables for the system. Contractor must pay special attention to which components are to be provided and/or installed by the successful AV Contractor. Refer to system riser diagrams and shading key to determine which components must be provided and installed.

11.4.2 Equipment Transport

Contractor shall pickup from owner storage facility and transport to work site all equipment provided by others.

11.4.3 Teacher Station

Each classroom is provided with a mobile teacher station location that will be cabled to the classroom rack location with a cable-socked umbilical. Teacher tables must be placed in rooms, components added and configured, and operation verified by the AV Contractor.

11.4.3.1 Additional Presentation Table Equipment

In music rooms, the AV Contractor will provide equipment as shown on riser diagrams to the school to be integrated into the Presentation Table by Others.

11.4.4 Classroom Rack

Classroom rack (shown as “CR” on associates drawings) shall be a wall mounted Hoffman 16” x 16” x 6” box. Hoffman box shall be provided and installed by the Electrical Contractor. AV Contractor shall install and connect CR module provided by others.

11.4.5 Display and Mount

The display device shall be an Epson BrightLink 450Wi projector. The AV contractor is required to perform all configuration/setup of this projector including, but not limited to, all LAN configurations, eco mode, adjust auto power on/off parameters, and adjust video parameters to optimize viewing. Interconnect cabling is to be neatly managed inside the mount and enclosure.

Mount projector to provide largest possible image on interactive board surface.

In the Orchestra Rehearsal room, install an additional projector on a large format screen as specified above the whiteboard.

11.4.6 T45 Raceway

Contractor shall provide and install Panduit T45 raceway to provide a cable pathway between Hoffman Box and Epson projector mount. Field cut openings as required in Hoffman box and projector mount cover to accommodate routing of cables.

11.4.7 Projector Interactivity

Contractor shall install interactive components in each classroom as provided by Others. Complete connections to AV system align and calibrate interactive board.

11.4.8 Additional Equipment

The AV6 system is very similar to the AV1 system with the exception of additional audio/visual equipment to support instruction of music.

11.4.8.1 Wireless Microphone

Each system will allow for one wireless microphone to be used at a time. The wireless channel will have one handheld and one bodypack with lavalier microphone configured to it as shown in associated drawings.

11.4.8.2 Wired Microphone

Each system will integrate a stereo microphone for ensemble recording. The microphone must be mounted from the ceiling in such a way to achieve the best stereo representation possible of the material being played in the space.

11.4.9 Document Camera

A document camera will be provided by Owner and must be integrated by the AV Contractor. AV Contractor will be responsible for setting document camera in place on teacher table, inventorying serial number by room, attaching video and power cable, and verifying correct operation.

11.5 Testing

Contractor shall perform a final system operation test using a Microsoft Excel based check list provided by technology consultant.

11.6 Documentation Binders

Provide two documentation binders.

11.7 Training

Provide two 2-hour teacher-training sessions on system usage. Coordinate training dates/times with District Administration.

12 AV7 – Small Conference Room AV System

12.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

General AV System Specifications

12.2 Drawings

12.2.1 Floor Plans

Refer to floor plans for locations of AV7 systems.

12.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

12.3 Existing Conditions

12.3.1 Ceiling

Conference Room ceilings are generally lay-in “drop” type. Contractor will be responsible to verify ceiling types in all rooms and provide and install components accordingly.

12.4 System Details

12.4.1 Concealing Equipment

There is no dedicated Audio/Visual furniture in the Small Conference Room spaces and, as such, all equipment must be concealed behind the display and/or attached to the mount in a neat and secure fashion.

12.4.2 Control Panel

The control panel must provide the following control features:

Display Power On/Off

Select Computer Source

Select IPTV Source

Select Aux Video Source

Volume Up

Volume Down

IPTV Channel Up

IPTV Channel Down

12.5 Testing

Contractor shall perform a final system operation test using a Microsoft Excel based check list provided by technology consultant.

12.6 Documentation Binders

Provide two documentation binders.

12.7 Training

Provide one 2-hour teacher-training sessions on system usage. Coordinate training dates/times with District Administration.

13 Digital Signage System

13.1 Applicable Specifications

The following specifications are included as part of the specification of this system:

General AV System Specifications

13.2 Drawings

13.2.1 Floor Plans

Refer to floor plans for locations of DS systems and size of display required.

13.2.2 System Risers

Refer to system riser diagrams for required equipment models, quantities and cabling. Gray shading indicates equipment provided by others, dashed outlines indicate equipment racks, enclosures, mounts or rack panels that house multiple pieces of equipment.

13.3 Specifications

13.3.1 Wall & Ceiling Locations

Provide wall or ceiling mounts as appropriate for installation location.

13.3.2 Mounting Heights

Coordinate location and mounting heights of displays with owner prior to installing mount.

13.3.3 Enterprise Server Software

Owner has an existing TightRope Carousel Enterprise Server in place.

The Contractor is to create a unique signage channel for each 32" department display and one channel to be utilized by all larger building displays.

Coordinate pre-made Carousel Signage Templates with the owner. Each channel shall consist of *up to* five (5) sign zones and contractor shall configure *up to* ten (10) bulletins per zone. Bulletin text information, pictures and media files are to be coordinated with owner. The signage system shall be fully functional with this "system kick-off" signage information in preparation for the required Tightrope factory trainer. Contractor is to coordinate with owner for entering system user information (login credentials and rights) on Enterprise Server. Contractor is to download & coordinate distribution of Tightrope Carousel screen-saver (for Macintosh computers) with owner. Refer to riser diagram for further integration notes.

13.3.4 Digital Sign Player

Each Digital Sign location shall utilize a Carousel Player small-form-factor device. Contractor shall neatly and securely mount the Player inside of the Media Player Holder and attach to the TV mount.

Players are to be fully configured with Tightrope Monitor Control Application for scheduled turn-on/off of the TV. Coordinate on/off times and schedule with owner.

Refer to riser diagram for integration notes.

13.3.5 MPEG Streaming

Each Player shall be configured with a software decoder to allow viewing of live MPEG2 video stream as part of a signage bulletin. Decoder shall be *Elecard MPEG-2 Plug-In for WMP*.

13.3.6 Morning Announcements

Owner provides live announcements using streaming video. Configure for each building's signage-channel a special full-screen bulletin that displays the announcement-streaming channel for that building. Train owner on how to activate this special bulletin using the enterprise server web interface.

13.3.7 Screen Saver

Assist owner in deployment of the Tightrope screen saver application for both Macintosh and Windows PCs. Provide instruction on how to configure viewing of the building local signage-channels.

13.3.8 Network Configuration

Contractor shall coordinate with owner on the assignment of IP addresses to all equipment. Each device shall be assigned unique device name and static IP address and shall be labeled with its name and IP address. Labels shall be machine printed.

Network addressing plan for sign players is as follows:

HS – 10.10.210.xxx

Where xxx represents the unique node number in the range of 1 to 255. All addresses use subnet mask 255.255.0.0.

13.3.9 **Documentation Binders**

Provide one documentation binder including Tightrope User Manual, LCD TV User Manuals, Excel format spreadsheet indicating digital player network name, building, location within building, IP address, MAC address, server login information, etc.

14 Intrusion Alarm System

14.1 General

14.1.1 Summary

Section Includes:

- Control Panel
- Associated Equipment

14.1.2 References

Underwriters Laboratories (UL):

- UL 365 – Police Station Connected Burglar Alarm Units and Systems
 - UL 609 – Local Burglar Alarm Units and Systems
 - UL 611 – Central Station Burglar-Alarm Units
 - UL 636 – Holdup Alarm Units and Systems
 - UL 684 – Local, Central Station, and Remote Station
 - UL 1023 – Household Burglar-Alarm System Units
 - UL 1076 – Proprietary Burglar-Alarm Units and Systems
 - UL 1610 – Central-Station Burglar-Alarm Units
- Federal Communications Commission (FCC):
- Code of Federal Regulations Title 47 - Part 15 – Radio Frequency Devices
 - Code of Federal Regulations Title 47 - Part 68 – Connection of Terminal Equipment to the Telephone Network

14.1.3 System Description

The system shall be a Burglary System that includes the following capabilities:

- Listed for UL Commercial Burglary.
- Supports up to 128 zones.
- Supports up to eight (8) separate partitions.
- Supports up to 150 users.
- Supports commercial wireless devices.
- Provides supervision of peripheral devices.
- Supports up to 96 optional relay outputs.
- Supports long-range radio (LRR) communication.
- Provides scheduling capability to allow for automated operations.
- Supports up to eight (8) alphanumeric paging devices.
- Supports panel linking.
- Interfaces with automation software.

14.1.4 System Coverage

Refer to provide floor plans for required alarm coverage areas and locations of system keypads.

14.1.5 Location of Electronics

Main system electronics panels shall be mounted on backboard in designated technology closets.

14.1.6 Emergency Power

System electronics shall be connected to emergency power.

14.1.7 Submittals

Submittals shall include manufacturer data sheets for all major system components.

14.1.8 Quality Assurance

The alarm manufacturer shall be certified as being compliant with ISO9001.

14.1.9 Contractor Qualifications

The alarm contractor must have been conducting business as an alarm installer / designer for not less than three years. The contractor must also be an authorized sales agent or dealer for the specified manufacturer.

A foreman with a minimum of three years field experience shall supervise the installing technicians assigned to the project.

14.2 Warranty

14.2.1 Electronics Warranty

All active electronics of the system are to carry a minimum 1-year on-site warranty.

14.2.2 Installation Warranty

All non-active hardware that is not covered by the above manufacturer warranty: wiring, connectors, jumpers, patch cords, equipment racks, and cabinets, as well as all workmanship and labor, will be warranted for a period of not less than two (2) years.

All warranties will begin immediately following the acceptance of completion, as determined by the Owner.

14.3 Workmanship

All work shall have a finished appearance. The contractor shall supply and repair / install all trim, covers, fixtures, carpet, ceiling tile, paint, hardware, brackets, etc., as needed.

14.4 System Performance

The control panel shall be an eight (8)-partition, UL commercial burglary control panel that supports up to 128 zones using basic hardwired, polling loop, and wireless zones. It shall also provide supervision of two (2) notification appliance output circuits (NAC), RF receivers, and relay modules. In addition, the control shall provide the ability to schedule time-driven events, and allow certain operations to be automated by pressing a single button. The system shall be capable of interfacing with an ECP long-range radio (LRR) unit that can send Contact ID messages, and alphanumeric paging devices.

14.4.1 Basic Hardwired Zones

The control shall provide eight (8) style-B hardwire zones with the following characteristics:

- EOLR supervision (optional for zones 3-8): Shall support N.O. or N.C. sensors (EOLR supervision required for UL installations).

- Zones/Points shall be individually assignable to one of eight (8) partitions.

- Support up to 50 two-wire latching glass break detectors on one selected zone.

- Individually assignable to Notification Appliance (NAC) outputs and/or auxiliary relays.

14.4.2 Optional Expansion Zones

14.4.2.1 Polling Loop Expansion

The control shall support up to 120 additional hardwire zones using a built-in two-wire polling (multiplex) loop interface. The polling loop shall provide power and data to remote point modules, and constantly monitor the status of all zones on the loop. Maximum current draw shall not exceed 128 mA. The polling loop zones shall have the following characteristics:

- Interface with RPM (Remote Point Module) devices that provide Class B, Style Y (e.g., 4208U/4208SN) or a combination of Class B, Style Y, and Class A, Style Z (e.g., 4208SNF) zones.

- Individually assignable to one of eight (8) partitions.

- Individually assignable to NAC outputs or auxiliary relays.

- Supervised by the control panel.

- A 12,000 ft (3658 m) wire run capability without using shielded cable.

- Each RPM (Remote Point Module) enclosure shall be tamper protected.

14.4.2.2 Wireless Expansion

The control shall support up to 128 wireless zones using a 5800 series RF receiver (fewer if using hardwire and/or polling loop zones). Wireless zones shall have the following characteristics:

- Supervised by control panel for check-in signals (except certain non-supervised transmitters).

- Tamper-protection for supervised zones.

- Individually assignable to one of the partitions.

- Individually assignable to bell outputs and or auxiliary relays.

- Support wireless devices listed for Commercial Burglary using the 5881ENHC RF Receiver.

14.4.3 Partitions

The control shall provide the ability to operate eight (8) separate areas, each functioning as if it had its own control. Partitioning features shall include:

- A Common Lobby partition (1-8), which can be programmed to perform the following functions:

 - Arm automatically when the last partition that shares the common lobby is armed.

 - Disarm when the first partition that shares the common lobby is disarmed.

- A Master partition (9), used strictly to assign keypads for the purpose of viewing the status of all eight (8) partitions at the same time (master keypads).

 - Assignable by zone.

 - Assignable by keypad/annunciator.

 - Assignable by relay to one or all eight (8) partitions.

 - Ability to display fire and/or burglary and panic and/or trouble conditions at all other partitions' keypads (selectable option).

 - Certain system options selectable by partition, such as entry/exit delay and subscriber account number.

14.4.4 User Codes

The control shall accommodate 150 user codes, all of which can operate any or all partitions. Certain characteristics must be assignable to each user code, as follows:

- Authority level (Master, Manager, or several other Operator levels). Each User Code (other than the installer code) shall be capable of being assigned the same or a different level of authority for each partition that it will operate.

- Opening/Closing central station reporting option.

- Specific partitions that the code can operate.

- Global arming capability (ability to arm all partitions the code has access to in one command).

- Use of an RF (button) to arm and disarm the system (RF key must first be enrolled into the system).

14.4.5 Peripheral Devices

The control shall support up to 30 addressable ECP devices, which can be any combination of keypads, RF receivers, relay modules, annunciator modules, and interactive phone modules. Peripheral devices have the following characteristics:

- Each device set to an individual address according to the device's instructions.

- Each device enabled in system programming.

- Each device's address shall be supervisable (via a programming option).

14.4.6 Keypad/Annunciator

The control shall accommodate up to 16 keypads or six (6) touch-screen (i.e.; advanced user interface) keypads. The keypads shall be capable of the following:

- Performing all system arming functions.

- Being assigned to any partition.

- Providing four programmable single-button function keys, which can be used for:

 - Panic Functions –activated by wired and wireless keypads; reported separately by partition.

 - Keypad Macros –32 keypad macro commands per system (each macro is a series of keypad commands). Assignable to the A, B, C, and D keys by partition.

14.4.7 Optional Output Relays

A total of 96 relay outputs shall be accommodated using relay modules. Each relay module shall provide four (4) Form C (normally open and normally closed) relays for general-purpose use or two (2) Class-B, Style-Y supervised notification appliance circuit outputs, when using the 4204CF module. The relays shall be capable of being:

- Programmed to activate in response to system events.

- Programmed to activate using time intervals.

- Activated manually using a relay command mode.

- Assigned an alpha descriptor.

- Used for Class B, Style-Y supervised bell outputs (4204CF module).

A combination of 4204 (ECP) and 4101SN (polling loop) relays.

14.4.8 **Optional Phone Interface Module**

The control shall support an interactive interface module which will connect to the PSTN or a local PABX, and permit access to the security system in order to perform the following functions:

- Obtain system status information.
- Arm and disarm the security system.
- Control relays.

14.4.9 **Optional LED Annunciator**

The control shall support remote LED annunciators which are capable of:

- Visually identifying a zone or point that is in alarm or trouble.
- Programmable for system silence/reset.
- Up to 96 LEDs may be used in one system.
- A total of four (4) FSA-24 or 12 FSA-8 annunciators may be used in one system.

An optional keyswitch module shall be available for use with the annunciators, for UL listed Silence and Reset capability.

14.4.10 **Notification Appliance Circuits (NAC)**

The Control Panel shall internally provide two supervised NAC outputs for operating fire and burglar alarm notification appliances. It shall also support additional supervised bell outputs when using 4204CF relay modules. Each NAC output shall be rated at 10-14 VDC, 1.7 amp max power limited. Total alarm current draw when using two NAC outputs shall not exceed 2.3 amps for battery independent operation.

14.4.11 **Auxiliary Relay**

A built-in Form C relay shall be provided. The relay contacts shall be rated at 28 VAC/VDC, 2.8 amps maximum. The relay shall support:

- Alarm activation
- Trouble/supervisory activation
- Battery saving feature

14.4.12 **Integration with Access Control**

The control shall be capable of the following:

- Providing a command that activates relays to allow access doors to open (e.g., lobby door), lights to be turned on or off, etc.
- Assigning any number of access control relays to each partition (up to 96 for the system).

14.4.13 **Commercial Wireless Equipment**

The Control shall be compatible with UL Listed Commercial Wireless Fire & Security equipment'

14.4.14 **Optional Keyswitch**

The control shall support manual keyswitch modules on any one of the system's eight (8) partitions. If used, zone 7 is no longer available as a protection zone.

14.4.15 **Voltage Triggers**

The system shall provide voltage triggers, which change state for different conditions. Used with long-range radio (LRR) equipment or other devices such as a remote keypad sounder, keyswitch ARMED and READY LEDs, or a printer to print the system's event log.

14.4.16 **Event Log**

The System shall maintain a log of different event types (enabled in programming). The event log shall provide the following characteristics:

- Stores up to 512 events.
- Viewable at the keypad or through the use of Compass software.
- Printable on a serial printer using a 4100SM Module including zone alpha descriptors.
- Sends printed events to up to eight (8) alphanumeric pagers.

14.4.17 **Scheduling**

Provides the following scheduling capabilities:

- Open/close schedules (for control of arming/disarming and reporting).

Holiday schedules (allows different time windows for open/close schedules).
Timed events (for activation of relays, auto-bypassing and un-bypassing, auto-arming and disarming, etc.).
Access schedules (for limiting system access to users by time)
End User Output Programming Mode (provides 20 timers for relay control).
The system shall automatically adjust for daylight savings time.

14.4.18 **Communication Formats**

Supports the following formats for the primary and secondary central station receivers:

- ADEMCO Low Speed (Standard or Expanded).
- Sescoa/Radionics.
- ADEMCO Express.
- ADEMCO High Speed.
- ADEMCO Contact ID.

14.4.19 **Backup reporting**

The system shall support backup reporting via the following:

- Secondary phone number.
- ECP long-range radio (LRR) interface.
- Option to select long range radio (LRR) or dialup as the primary reporting method (dynamic signaling feature).

14.4.20 **Cross-Zoning Capability**

Helps prevent false alarms by preventing a zone from going into alarm unless its cross-zone is also faulted within five (5) minutes.

14.4.21 **Pager Interface**

The Control Panel shall be capable of sending event information to an alphanumeric pager via a VA-8201 pager interface device.

14.4.22 **24-Volt Power Supply**

The Control Panel shall be compatible with a 24-Volt power supply module. The module shall supply two (2) 24 vdc, 3.4 amps, rectified, unfiltered outputs, which power:

- Alarm notification appliances, including but not limited to sirens horns, bells and strobes.
- Auxiliary devices capable of operating using full-wave rectified unfiltered voltage.

14.4.23 **Exit Error False Alarm Prevention Feature**

The System shall be capable of differentiating between an actual alarm and an alarm caused by leaving an entry/exit door open. If not subsequently disarmed, the control panel shall:

- Bypass the faulted E/E zone(s) and/or interior zones and arm the system.
- Generate an Exit Error report by user and by zone so the central station knows it was an exit alarm and who caused it.

14.4.24 **Built-in User's Manual and Descriptor Review**

For end-user convenience, the control panel shall contain a built-in User's Manual. It shall include the following capabilities:

- By depressing any of the function keys on the keypad for five (5) seconds, a brief explanation of that function shall scroll across the alphanumeric display.
- By depressing the READY key for five (5) seconds, all programmed zone descriptors shall be displayed (one at a time). This feature shall provide a check for installers and ensure all descriptors have been entered properly.

14.4.25 **Programming**

The Control shall be capable of being programmed locally or remotely using the ADEMCO Compass Downloader and shall be capable of:

- Uploading and downloading all programming information at 300 baud.
- Uploading and displaying firmware revision levels from the control.

14.4.26 Panel Linking

The Control shall be capable of being networked together with up to eight other controls and being operated by any keypad within the system. It shall provide the ability for users to:

- Control multiple zones, partitions, and/or buildings from a central location.
- Check status, arm and disarm any partition from any keypad in the system.
- Globally arm or disarm partitions based upon user authority.

14.4.27 Automation Software

The Control shall be capable of interfacing with automation software via an RS232 input on a single partition.

14.4.28 Enclosure

The Control Panel shall be enclosed in a metal cabinet, suitable for wall mounting. The dimensions shall not exceed 18 inches (45.7 cm) in height, 14.5 inches (36.8 cm) in width or 4.3 inches (10.9 cm) in depth.

14.4.29 Electrical Power Requirements

System Power – The Fire and Burglary Alarm System shall operate using standard 120 volts AC, 50/60 Hz power.

Control Primary Power – Transformer power shall be 18 VAC, 72 VA.

Backup Battery – A rechargeable 12 VDC, gel type, lead acid backup battery shall be provided. The battery shall be rated between 12 and 34-ampere hours (AH).

Alarm Power – Alarm power shall be 12 VDC, 1.7 amps for each bell output

Auxiliary Standby Power – Standby power shall be 12 VDC, 1 amp maximum.

Total Power - Combined auxiliary standby and alarm currents shall be 2.3 amps.

Fusing – The battery input, auxiliary, and bell outputs shall be protected using PTC circuit breakers. All outputs shall be power limited.

Power Supply - A 24-volt power supply shall provide 24 vdc, 3.4 amps full-wave rectified, unfiltered outputs.

14.4.30 Environmental Conditions

Environmental Conditions – The Fire and Burglary Alarm System shall be designed to meet the following environmental conditions.

Storage Temperature – The system shall be designed for a storage temperature of -10° C to 70°C.

Operating Temperature - The system shall be designed for an operating temperature of 0° C to 50°C (32° F to 120°F).

Humidity - The system shall be designed for normal operation in an 85% relative humidity environment.

Electromagnetic Interference – The system shall meet or exceed the requirements of FCC Part 15, Class B devices, FCC Part 68, IEC EMC directive.

14.5 Execution

14.5.1 Examination

Submission of a proposal confirms that the Contract Documents and site conditions are accepted without qualifications unless exceptions are specifically noted.

The site shall be visited on a regular basis to appraise ongoing progress of other trades and contracts, make allowances for all ongoing work, and coordinate the requirements of this contract in a timely manner.

14.5.2 Installation

The System shall be installed and tested in accordance with the Manufacturer's Installation instructions. The following conditions are applicable:

In order to ensure a complete, functional System, for bidding purposes, where information is not available from the Owner upon request, the worst case condition shall be assumed.

Interfaces shall be coordinated with the Owner's representative or the Technology Consultant, where appropriate.

All necessary backboxes, pullboxes, connectors, supports, conduit, cable, and wire shall be furnished and installed to provide a complete and reliable System installation. Exact location of all boxes, conduit, and wiring runs shall be coordinated with the Owner's representative or the Technology Consultant in advance of any installation.

14.5.3 Cable Routing

All cable is to be concealed. It must be installed above drop ceilings, in access tunnels or in surface raceway. No exposed cable is allowed.

The electrical contractor will provide raceway and corings for this project. However, the cabling contractor may be required to install raceway or corings on an ad hoc basis. The specification below applies to any pathways installed.

14.5.4 Cable Support

Cables must be supported at least every five (5) feet. Tie-wraps are not acceptable for cable support. Cable trays and Caddy "J" hooks are the preferred method of cable support. For bundles of six or fewer cables, bridal rings and drive hooks may be used.

Velcro wraps with a minimum width of 3/8" are acceptable for cable support. Tie-wraps may be used to organize cable as long as they do not deform the cable jacket and are not supporting the weight of the cable.

14.5.5 Wall Penetrations

Wall penetrations or corings must be provided with EMT sleeves and protective bushings to prevent damage to cable as it is pulled through sleeves. The maximum fill for all sleeves shall not exceed 60% of capacity to allow sufficient space for firestopping material.

14.5.6 Fire-stopping

Any penetrations of fire-rated walls must be fire-stopped using a UL approved material to restore the wall to its original fire rating. Fire-stopping material shall be the removable putty type to allow future cable system upgrades. The maximum fill percentage for all penetrations shall be 60% to allow room for fire-stopping material.

The Data Cabling Contractor will perform all fire-stopping on this project.

EXCEPT:

The Access-Control Contractor is responsible for replacing any fire-stopping material removed from penetrations for the routing of their cable runs.

The Access-Control Contractor is responsible for fire-stopping any new penetrations they add for the routing of their cables. Contractor is responsible to install firestop materials in any penetrations utilized for the routing of access control cables.

14.5.7 Labeling

14.5.7.1 Cables

Each cable is to be clearly marked with a computer printed label showing the Cable ID. Hand printed labels are not acceptable.

Each cable shall be marked with its Cable ID using a self-laminating label. Each end of the cable must be labeled within one foot of the termination point.

The ID of each cable shall correspond to the cable identification on the as-built drawings.

14.5.7.2 Controllers

Each system panel, expansion panel, or junction box is to be clearly marked with a computer printed self-laminating label showing the ID of the unit. Hand printed labels are not acceptable.

The ID of each unit shall correspond to the unit identification on the as-built drawings.

14.5.8 Testing and Certification

The Contractor shall demonstrate the functionality of the System upon completion of installation, documenting the result of all tests and providing these results to the Owner. The System shall be tested in accordance with the following:

The Contractor shall conduct a complete inspection and test of all installed equipment. This includes testing and verifying connection to equipment of other Divisions.

The Contractor shall provide staff to test all devices and all operational features of the System for witness by the Owner's representative and the Authority having jurisdiction. The Contractor shall provide two-way radio communications to assist in the testing. All testing must be witnessed by the owner's representative, prior to acceptance.

14.5.9 The testing and certification shall take place as follows:

System shall be tested in conjunction with the manufacturer's representative.

All deficiencies noted in the above test shall be corrected.

Test results shall be submitted to the consultant or owner's representative.

System test witnessed by owner's representative and correction of any deficiencies noted.

The owner's representative shall accept the System.

System test shall be witnessed by the authority having jurisdiction, and any deficiencies that are noted shall be corrected.

A letter of certification shall be provided to indicate that the tests have been performed and all devices are operational.

14.6 Project Closeout

14.6.1 As-Built Floor Plan

The Contractor will prepare a final as-built floor plan that shows the location of each alarm node and device in the building, and the routing of all alarm cables. This floor plan will be provided to the Owner's Representative and Technology Consultant in printed form at no less than 11" by 17" and on CD-ROM in Acrobat PDF format and DXF format.

The contractor may create the as-built drawings from scratch, or obtain a set of base drawings from the Technology Contractor. These drawings may be obtained in PDF, DXF, or DWG format.

14.6.2 As-Built Wiring Diagram

The Contractor will prepare a final as-built wiring diagram of the alarm system electronics. The plan must show unique Cable IDs for each wire that match the cable ID provided on the installed cables.

This diagram plan will be provided to the Owner Owner's Representative and Technology Consultant in printed form at no less than 11" by 17" (3 copies) and on CD-ROM in Acrobat PDF and DXF format.

14.6.3 System Documentation

Submit one system documentation binder containing:

- Equipment manuals

- Delivery records stating manufacturer, part number, serial number, and installation location for all active components of the system

- Any software installation CD-ROM

- Final system as-built diagrams on paper and in electronic format

- Backup of system programming on CD-ROM

Delivery and approval of complete and satisfactory system documentation is one of the conditions for final payout on the project.

15 Clock/Bell/Paging System

The contractor shall provide infrastructure, cable, hardware, and equipment, as required, to provide a complete and operational clock/bell/paging system.

15.1 Work Summary

The work in this section includes:

- Installation of electronics
- Cabling and interconnection of equipment
- Final system configuration
- Testing and documentation
- Orientation and training

15.2 General Requirements

15.2.1 Contractor Qualifications

The successful Contractor will show past experience in designing and installing systems of this type. The Contractor shall have been in business for at least 5 years.

15.2.2 Applicable Standards

This installation will be in accordance with but not limited to the following standards:

- National Electric Code (NEC)
- National Fire Protection Association (NFPA)
- BICSI Structured Cabling Standards and Practices

If any discrepancies exist between these standards and the technical specifications of this document, the technical specifications of this document will apply.

15.2.3 Grounding and Bonding

The contractor will be responsible for grounding all equipment installed in accordance with BICSI grounding standards.

15.2.4 System Diagram

Refer to the provided system riser diagrams, floor plans, and detail drawings for equipment specifications, locations, and installation requirements.

15.2.5 Cable Fire Rating

Cabling for this system shall be plenum rated.

15.3 Clock System

15.3.1 Acceptable Manufacturers

The following are the approved system manufactures:

- American Time & Signal

Manufacturer's names are listed herein to establish a standard. The products of other manufacturers will only be acceptable if approved by the specifying architect and the Owner 10-days prior to the bid. The substitute material must be of a quality as good or better than the material specified, and will serve with equal efficiency and dependability, the purpose for which the items specified were intended.

Final approval of these alternates shall be determined at the time of completion. Failure to provide the "functional equivalent" shall result in the removal of the alternate system and installation of the specified system at the contractor's cost.

The intent is to establish a standard of quality, function and features. It is the responsibility of the bidder to insure that the proposed product meets or exceeds the intent of these specifications.

The functions and features specified are vital to the operation of this facility and therefore inclusion in the list of acceptable manufacturers does not release the contractor from compliance with the requirements of this specification.

15.3.2 **Clock & Bell Controller**

The controller shall transmit wireless time synchronization signals to the clocks and bell tone generators. Controller shall be American Time & Signal SiteSync IQ series.

15.3.2.1 **Transmitter Power**

The wattage of each controller shall be sized appropriately to provide reliable coverage of the building it is intended to serve.

15.3.2.2 **Unlicensing**

Controller shall utilize an unlicensed frequency and shall not require FCC registration.

15.3.2.3 **Time Slotting**

Each building shall be configured with a separate time-slot to prevent possible interference between controllers.

15.3.2.4 **Time Reference**

The controller shall utilize the owner's local NTP server as the time reference. Coordinate the IP address of this server with Owner.

15.3.2.5 **System Programming**

All programming shall be performed using a web-based interface.

15.3.2.6 **IP Address**

Coordinate assignment of controller's IP address with Owner.

15.3.2.7 **Rack Mounting**

Controller shall be rack mounted.

15.3.3 **Bell Tone Generator**

Bell tone generator shall produce line level audio tones in response to wireless commands received from the Clock and Bell Controller. Bell Tone Generator shall be American Time & Signal model SSQWCA-2B4T-WEB.

15.3.3.1 **Tone Outputs**

Generator shall provide several recorded tones with a traditional mechanical bell sound being preferred. Tone output shall be line level audio.

15.3.3.2 **Relay Outputs**

Generator shall provide relay outputs to allow interfacing with equipment.

15.3.4 **Clocks**

All clocks shall receive wireless synchronization signals from the Clock and Bell Controller.

15.3.4.1 **Clock Size**

Clocks shall be analog and shall be available in 12 inch and 15 inch sizes.

15.3.4.2 **Clock Power**

Clock power options shall include 120-volt AC, 24-volt AC and extended life battery.

Clocks replacing existing 120-volt clocks shall utilize the existing 120-volt power.

Clocks installed at new locations shall utilize new wired 24-volt power where ever practical.

Battery powered clocks are used in areas where running new-wired power would be difficult, but are not preferred.

15.3.4.3 **Clock Type Symbols**

Refer to system riser diagram for clock type symbols.

15.3.4.4 **Clock Guards**

All clocks installed in gymnasium areas shall be provided with a protective wire guard.

15.3.5 **Power Supplies**

Provide UL listed power supplies as required to power all installed equipment. Connect power supplies to UPS supported power where available.

15.3.5.1 **Power Wiring**

Any new power wiring shall be low voltage and shall be sized to meet clock manufacturers' specifications for run length and volte drop.

15.3.6 **Existing Master Clocks**

Existing master clock systems will no longer be used to synchronize clocks or provide bells and shall be removed or clearly marked as inactive. Any existing 120-volt power circuits supporting existing clocks are to be maintained.

15.4 **Paging System**

The paging system will provide multi-zone coverage over the entire premises.

15.4.1 **Paging Controller**

Owner's existing Telecor system shall be utilized with upgrade as required to support the zones defined on the system risers.

15.4.2 **Speaker Zones**

The paging system shall provide paging zones as indicated on riser diagrams and floor plans. Coordinate with Owner and obtain written approval of wired paging zones prior to installation of speakers.

15.4.3 **Logical Paging Zones**

Coordinate with owner on the design of logical paging zones built from combinations of the physically wired zones. Logical zones shall be directly available via the telephone system interface.

15.4.4 **Telephone System Connectivity**

Contractor shall provide connectivity to a telephone system provided by others. The telephone system will be located in the building MDF. Connection shall be to a FXO port on the phone system. Coordinate wiring to telephone system with Owner. Wiring to support this connection is the responsibility of the Paging Contractor.

15.4.5 **Existing Paging Amplifier**

Each building has an existing Crown 25-volt paging amplifier that will be utilized for this project. Relocate the amplifier to the new locations as indicated on riser diagrams.

15.4.6 **Recommended Materials**

Refer to the provided drawings for individual model and part numbers of components. The individual items listed there are provided to assist in preparation of your response. This list is not intended to be comprehensive and not all required items are included. Bidders are responsible to provide all parts required to install a fully functional system. The omission of any required parts from the provided drawings or materials list in this RFP does not alter this requirement.

The listed materials are the preferred equipment. Unless noted otherwise, bidders may substitute equipment, provided all substituted items meet or exceed the specifications of the listed equipment. All substitutions must be noted in your bid response. Cut sheets must be provided with your bid response for any items that are substituted. Failure to note substitutions may disqualify your bid.

15.4.7 **New Speakers**

Refer to the provided drawings for speaker type, location and quantities. All speakers shall be configured for operation on a 25-volt system. Speakers shall be provided with tile-bridge and back box as indicated on drawings.

15.4.8 **Existing Speakers**

All speakers in areas of the building that do are receiving new drop ceiling shall be remain and shall be connected to the new paging system.

15.4.9 **Speaker Wire**

Speaker wire shall be jacketed, stranded cable. The number of pairs, wire size, and shielding for each cable is specified on the provided drawings. Belden, West Penn, or an approved alternate shall manufacture Cables.

15.4.10 **Paging Volume**

Each paging speaker shall be tapped to provide an appropriate volume level for the location where they are installed. Speakers shall provide a volume level 6 dB over the maximum expected ambient sound level of the environment.

15.4.11 **Quality**

System shall provide clear and intelligible reproduction of voice and musical audio sources that is free of distortion or interference.

15.5 **General Installation**

15.5.1 **Cable Pathways**

Contractor shall provide any additional corings, sleeves and bushings required to complete installation of speaker cables.

15.5.2 **Exposed Cables**

All permanently installed cable is to be concealed, either installed above drop ceilings, in access tunnels or in surface raceway. No exposed cable is allowed.

Where open ceilings exist, all cable must be concealed above trusses or routed through conduit or raceway. Exposed cable must be painted to match ceiling color.

15.5.3 **Wall and Floor Penetrations**

Wall penetrations or corings must be furnished with EMT sleeves and protective bushings to prevent damage to cable as it is pulled through sleeves. The maximum fill for all sleeves shall not exceed 60% of capacity to allow sufficient space for fire-stopping material.

15.5.4 **Exterior Speakers**

Contractor is responsible to provide all pathways, corings and boxes needed to support exterior speakers. Exterior speakers will be directly attached to building structure. All penetrations must be sealed with 50-year rated 100% silicone caulking.

15.5.5 **Cable Support**

Cables must be supported no less than every eight (8) feet. Cable trays and Caddy "J" hooks are the preferred method of cable support. For bundles of six or less cables, bridal rings and drive hooks may be used. Low-voltage cables must be grouped into bundles wherever possible. Loose cables above drop ceilings are not acceptable.

15.5.6 **Fire-stopping**

All wall and floor penetrations must make use of EMT sleeves. The maximum fill percentage for all penetrations shall be 60% to allow room for fire-stopping material.

The Data Cabling Contractor will perform all fire-stopping on this project EXCEPT:

The Clock/Bell/Paging Systems Contractor is responsible for replacing any fire-stopping material removed from penetrations for the routing of their cable runs.

The Clock/Bell/Paging System Contractor is responsible for fire-stopping any new penetrations they add for the routing of their cables.

15.6 **System Testing**

Prior to owner acceptance the Contractor shall perform a test of the complete paging system to verify all speakers are operating properly and are members of the correct zone. Coordinate scheduling of testing so that Owner's Representative is present during testing.

Contractor will adjust speaker tap settings on all speakers to provide a volume level appropriate to the area served by the speakers. Sound reproduction must be clear and free of hum, static or other distortion.

Contractor shall provide and install any additional speakers that testing indicates are required to provide a clear and audible paging volume level.

Prior to owner acceptance the Contractor shall perform a test of the clock system to verify correct operation, time synchronization and bell scheduling. Coordinate scheduling of testing so that Owner's

Representative is present during testing. Coordinate with the paging contractor to verify correct tone generation thru the paging system based upon trigger from the Bell Scheduler/Tone System components.

15.7 Training and Orientation

Provide a minimum of one 2-hour training session per building for district staff. Coordinate details and schedule with owner.

15.8 Project Closeout

15.8.1 As-Built Floor Plan

The contractor will prepare a final as-built floor plan that shows the location of each clock in the building and the routing of all clock power cables. This floor plan will be provided to the customer in printed form and on CD-ROM in Acrobat PDF format or DXF format.

15.8.2 As-Built Wiring Diagram

The contractor will prepare a final as-built wiring diagram of clock system electronics. The plan must show unique Cable IDs for each wire that match the cable ID provided on the installed cables.

This diagram plan will be provided to the customer in printed form and on CD-ROM in Acrobat PDF format or DXF format.

15.8.3 System Documentation

Submit one (1) documentation binder per building containing:

- Copies of all equipment manuals
- Copies of all equipment warranty agreements
- Documentation of all system user names and passwords
- Documentation of all assigned IP addresses
- Delivery records stating manufacturer, part number, serial number and installation location for all active components of the system.
- Final system as-built floor plan on paper and on CD-ROM

16 Access Control System

The contractor shall provide infrastructure, cable, hardware, and equipment, as defined, to provide a complete and operational access control system.

16.1 Work Summary

Work covered by this section includes:

- Access control component cabling
- Low voltage power cabling and associated power supplies
- Access control devices: proximity readers, request to exit sensors, etc.
- Electric strikes, retractors and required power supplies.
- Software configuration
- Administrator orientation and training

16.2 General Specifications

The Access Control System is intended to support computer-based control of entry points at this facility. It will connect to the existing TCP/IP data network and will provide access to its interface across the existing wide-area network (WAN).

The system shall be sized appropriately to accommodate control of doors identified in this project as well as be expandable to allow connection to future doors in this building.

16.2.1 Contractor Qualifications

The access control contractor must have been conducting business as an access-control installer / designer for not less than three years. The contractor must also be an authorized sales agent or dealer for the specified manufacturer.

A foreman with a minimum of three years field experience shall supervise the installing technicians assigned to the project.

16.2.2 Permits

The contractor will be responsible for obtaining at their expense all permits necessary for installing all components of this project.

16.2.3 Applicable Standards

This installation will be in accordance with but not limited to the following standards:

- National Electric Code (NEC)
- National Fire Protection Association (NFPA)
- BICSI Structured Cabling Standards and Practices

If any discrepancies exist between these standards and the technical specifications of this document, the technical specifications of this document will apply.

16.2.4 Grounding and Bonding

The contractor will be responsible for grounding all equipment installed in accordance with BICSI grounding standards.

16.3 Site Details

16.3.1 Locations

Refer to floor plans for the location of the access controlled doors.

16.3.2 Pathways

All access-controlled doors will be provided with conduit pathways by the electrical contractor as indicated on provided drawings to accommodate wiring for:

- Door position sensor
- Request to exist sensor
- Proximity reader
- Door strike

16.3.3 ADA Door Operators

Where access controlled doors include an ADA door operator, coordinate the interconnection of access control system to the door operator with the door hardware contractor. Coordinate the location of the proximity reader to the ADA operator button.

16.3.4 Approved Manufacturer

S2 Security

16.3.5 Required Functions

System must provide the following capabilities:

- Native IP compatibility
- Imbedded web interface compatibility with all major Windows, Linux and OS X web browsers
- Solid-state flash storage – no moving hard drive
- PoE based controller option
- Integration with IP based security DVR systems including ONSSI
- Microsoft Active Directory integration
- User import and export utility
- Ability to delegate administration of buildings or portal groups

16.4 Access Control Electronics

16.4.1 Main Controller

Main Controller shall be a S2 Security network controller equipped with readers, inputs and outputs as needed to support doors as defined by system riser diagram. The control shall be installed in the district server room located in the High School.

16.4.2 Licensing

Provide licensing as defined by system riser diagram.

16.4.3 Network Node

Network nodes shall be S2 Security S2-NN-E#R-WM equipped with readers, inputs and outputs as needed to support doors as defined by system riser diagram. The unit shall be wall mounted on backboard in building Technology Closets.

16.4.4 Power Supply

Shall be by Alltronic and shall be UL listed and provide contact closure input for connection to fire alarm panel. Model shall be AL600ULACM for 8 outputs or MAXIM33 for 16 outputs.

16.5 Proximity Tokens

Provide owner with HID proximity tokens of the following types:

- HID Proximity Key Fob 1346 ProxKey II
- HID Proximity Card 1386

Refer to system riser for quantities required.

16.6 Standard Door Equipment

16.6.1 Door Proximity Card Reader

Shall be HID ProxPro model 5355.

16.6.2 Request to Exit Sensor

Shall be Securitron XMS.

16.6.3 Door Position Sensor

Shall be GE model 1076C or equivalent.

16.6.4 Door Strikes and Retractors

Others will provide door hardware in the majority of the building that is included in the construction project. The Gym and Field House portion of the building are outside of the construction project and all required door hardware must be supplied and installed by Access Control Contractor.

Contractor shall provide and install all required electric strikes, electric retractors and power supplies required at access-controlled doors. Contractor shall perform a field inspection of all doors at the start of the project to determine the type of hardware required. Coordinate selection of door hardware with Owner prior to ordering.

16.7 Installation

The contractor shall assemble, install, and configure components to achieve a fully functional and workable system. The contractor shall supply any additional components, which are not listed, but are required for a fully functional system.

16.7.1 Fire alarm Integration

Where required by code, the access control system power supply shall be linked to the building's fire alarm panel. Coordinate any required connections with fire alarm contractor.

16.7.2 Cable Routing

All cable is to be concealed and must be installed above drop ceilings, in access tunnels or in surface raceway. Tele/Power poles may be required to route cable to freestanding computer equipment. No exposed cable is allowed.

The electrical contractor will provide raceway and corings for this project. However, the cabling contractor may be required to install raceway or corings on an ad hoc basis. The specification below applies to any pathways installed.

16.7.3 Wall Penetrations

Wall penetrations or corings must be provided with EMT sleeves and protective bushings to prevent damage to cable as it is pulled through sleeves. The maximum fill for all sleeves shall not exceed 60% of capacity to allow sufficient space for firestopping material.

16.7.4 Cable Support

Cables must be supported at least every five (5) feet. Tie-wraps are not acceptable for cable support. Cable trays and Caddy "J" hooks are the preferred method of cable support. For bundles of six or fewer cables, bridal rings and drive hooks may be used.

Velcro wraps with a minimum width of 3/8" are acceptable for cable support. Tie-wraps may be used to organize cable as long as they do not deform the cable jacket and are not supporting the weight of the cable.

16.7.5 Fire-stopping

Contractor is responsible to install firestop materials in any penetrations utilized for the routing of access control cables.

All wall and floor penetrations must make use of EMT sleeves.

Any penetrations of firewalls must be fire-stopped using a UL approved material to restore the wall to its original fire rating.

The maximum cable fill of any sleeve shall be 60%.

Fire-stopping material shall be the removable putty type to allow future cable system upgrades.

16.7.6 Labeling

16.7.6.1 Cables

Each cable is to be clearly marked with a computer printed label showing the Cable ID. Hand printed labels are not acceptable.

Each cable shall be marked with its Cable ID using a self-laminating label. Each end of the cable must be labeled within one foot of the termination point.

16.7.6.2 Controllers

Label each controller with its host name and assigned IP Address.

16.8 System Programming

The contractor shall work with the owner and owner's representative to configure the system to meet the needs of the facility.

16.8.1 User Groups

The Contractor shall configure up to six (6) user groups.

16.8.2 User Setup

The Contractor shall create or import up to 200 users into the access control system.

16.8.3 Portal Groups

The Contractor shall configure up to six (6) portal groups.

16.8.4 Access Levels

The Contractor shall configure up to six (6) access levels.

16.8.5 Time Specification

The Contractor shall configure up to ten (10) time specifications.

16.8.6 Holiday schedules

The Contractor shall import the owner provided holiday schedule for one year from the completed commissioning date.

16.8.7 Floor-plan Import

The Contractor shall import up to five (5) unique floor plans. Each floor plan shall indicate all portals configured in the system.

16.9 Owner Orientation

Provide one two-hour training session for each building to orientate staff in the operation of the system.

Provide one four-hour training session to train school technology staff in the configuration and maintenance of the system.

All training is to be provided at owner's facilities.

16.10 Project Closeout

16.10.1 System Documentation

Submit system documentation binder containing:

- Equipment manuals

- Licensing documentation

- Any software installation CD-ROM

- Final system as-built diagrams on paper and in electronic format

- Backup of system programming on CD-ROM

17 Surveillance Camera System

This project will provide an IP based surveillance camera system for designated buildings. The system will make use of the facilities Ethernet network

17.1 Work Summary

Work covered by this section includes:

- Network Video Recorder configuration
- Indoor & Outdoor Camera installation
- Final camera placement and view angle coordination with Owner
- Administrator orientation and training

17.2 General Specification

17.2.1 Project Overview

The Owner will provide server hardware and storage to support a software-based network DVR.

The Owner will provide POE network switch hardware to support all cameras.

Category 6 cabling will be provided at the provided at approximate camera locations with service loop. Building floor plans are included in this RFP noting approximate camera locations and approximate view angle. The Contractor is to coordinate final camera placement and field-of-view with Owner.

This project is organized as a base bid providing NVR and cameras and as an add alternate that expands the number of cameras.

17.3 Network Video Recorder

Owner has existing On-Net Surveillance Systems Ocularis DS server in place. This server will be used for this project. Should additional servers be required Owner will provide virtualized hardware and Contractor shall be responsible for configuration of additional server instances.

17.3.1 Camera Licensing

Provide one NetDVMS camera access license, part number OC-DVMS-1C for each IP camera installed.

17.3.2 Camera Support Licensing

Provide three years of manufacturer software upgrade protection for each IP camera installed.

17.4 Camera Base Bid

Provide pricing to supply and install cameras and licensing to support all cameras locations indicated as base bid on floor plans.

17.5 Cameras Hardware

Refer to system drawings for camera models and locations.

17.5.1.1 Vari-focal Lens Options

Where required to achieve required coverage, outdoor cameras shall be provided with alternate vari-focal lenses. Lens options shall be available ranging from 2.8mm to 50mm.

17.5.2 Camera Mounts

Each camera shall be provided with the appropriate mounting hardware for its installation location. Mounting hardware shall be by the same manufacturer as the camera equipment.

17.5.3 Indoor

Cameras in lay-in ceiling areas shall be recessed. Cameras in open ceiling areas shall be surface mounted.

17.5.4 Outdoor

Exterior cameras shall be installed using exterior rated wall, corner or pole mount hardware as is appropriate for the installation location.

All exterior camera fasteners shall be stainless steel.

Exterior cameras shall be mounted a minimum of 12 feet above grade.

17.6 Camera Cabling

17.6.1 Maintenance Loops

Cabling to support the cameras will be provided and installed by the Cabling Contractor and is not part of this project. Maintenance loop are provided to allow relocation of cameras up to 30 feet from the location indicated on floor plans. This allows the camera vendor to select the exact location of camera installation to provide optimal coverage. Note that maintenance loops for exterior cameras are currently located on the interior of the building. Contractor is to provide proper coring for final cable path to the exterior camera mount location.

17.6.2 Patch Cables

Category 6 patch cables shall be used to complete camera connections. Patch cords shall be white.

17.6.3 Ethernet Surge Suppressors

Ethernet surge suppressors shall protect all exterior camera connections. Suppressors shall be American Power Conversion model PNET1GB. Surge suppressors shall be securely connected to an electrical ground using a minimum #16 AWG green insulated conductor.

17.6.4 PoE Network Extenders

Where exterior camera cable distances exceed 295 feet provide and install PoE Ethernet extenders. Extenders shall be Veracity model VOR-OR.

17.7 General Installation

17.7.1 IP Addressing

Coordinate with owner on the selection of any IP Addresses assigned to equipment. ALL CAMERAS MUST BE ASSIGNED STATIC IP ADDRESSES PER OWNER IP ADDRESS PLAN PRIOR TO INSTALLATION ON THE NETWORK.

17.7.2 Camera VLAN

All security camera traffic shall be restricted to a dedicated VLAN for this purpose. Each physical building shall have a dedicated VLAN for security cameras. Coordinate with Owner on connection of all IP equipment to Owner's network and on the assignment of switch ports to the proper VLAN.

17.8 Camera Installation

17.8.1 Camera Coverage

Prior to final installation of cameras, coordinate with Owner on the exact location and intended coverage area for each camera.

17.8.2 Cable Relocation

Relocate cable drop using provided maintenance loop if required to provide best camera coverage.

17.8.3 Cable Support

Relocated Camera cables are to be routed and supported using cable trays and "J" hooks as required. Provide support at intervals no greater than 5 feet.

17.8.4 Concealed Cables

Camera cables shall be concealed from view by routing above lay-in ceiling, routing on topside of trusses in open ceiling areas or installed in conduit.

17.8.5 Exterior Cable Routing

Camera contractor shall core exterior walls as required to provide a cable pathway to each exterior mounted camera. Owner shall approve the location of all corings prior to performing. Corings shall be sealed using removable waterproof caulk.

17.8.6 Labeling

Each camera will be assigned a unique ID that matches the ID of the category 6 cable it is connected with. Clearly label each camera with its Camera ID using a machine printed label.

17.8.7 **Camera Adjustments**

Adjust aim, zoom, focus and iris settings of camera to optimize the cameras view during both daylight and night operation. Coordinate final camera view angles with owner.

17.8.8 **Network Video Recorder Installation**

Complete the following minimum tasks for software installation:

- Install software and patch to latest version
- Install base licensing
- Install camera licensing
- Configure camera ID and descriptive names
- Configure camera frame rates
- Configure camera compression
- Configure camera resolution
- Configure motion detection
- Configure motion mask areas
- Configure active and archive storage areas
- Configure to retain 30 days of recordings
- Configure e-mail alerts – coordinate with owner
- Import building floor plan and add camera information

17.8.9 **Building Maps**

For each district building, import diagrams into NetDVMS software and create active links to all camera locations.

17.8.10 **Client Viewing Software**

Install and configure client-viewing software on district computers as directed by owner. Install viewing software on up to 15 workstations. Configure custom views for all users that are appropriate to their job function.

17.9 **Training**

17.9.1 **Administration Training**

Provide a total of four hours of training for district's technical staff on the operation and administration of the ONSSI software. This training will include the creation of custom views.

17.9.2 **User Training**

Provide two two-hour training sessions at each building on the use of the viewing software including the conversion of video to CD ROM.

17.10 **Project Closeout**

Submit one documentation binders containing:

- Equipment manuals
- Software installation CD-ROM
- Licensing Documentation
- Final system as-built diagrams on paper and in electronic format
- Backup of system programming on CD-ROM

18 Structured Cabling

18.1 Work Summary

Work covered by this section includes:

- Demolition of old voice, data and video cabling
- Cable pathways and support
- Racks and related equipment for wiring closets
- Category 6 structured cabling
- Category 3 voice backbones
- Fiber optic backbones

18.2 General Specifications

The proposed Structured Wiring System is intended to support voice and Ethernet data communication at rates up to 1000 Mbps. It will consist of a star topology with category 6 UTP cable from distribution frames to workstation outlets.

18.2.1 Category Ratings

All cables and termination hardware shall be Category 6 rated and meet the specifications of TIA/ EIA-568-B.2-1, Transmission Performance Specifications for 4- Pair 100- Ohm Category 6 Cabling.

18.2.2 Warranty

A certified installation, with a 20-year joint warranty from the termination hardware manufacturer and the cable manufacturer, is required. Include in your bid response a letter showing Panduit authorization.

All hardware that is not covered by the above manufacturer warranty: connectors, jumpers, patch cords, equipment racks, and cabinets, as well as all workmanship and labor, will be warranted for a period of not less than one (1) year.

All warranties will begin immediately following the network acceptance, as determined by the Owner.

18.2.3 Applicable Standards

This installation will be in accordance with but not limited to the latest fully ratified and accepted version of the following industry standards:

National Electric Code

TIA/EIA-568-B.1 Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements

TIA/EIA-568-B.1-1 Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements - Addendum 1 - Minimum 4-Pair UTP and 4-Pair ScTP Patch Cable Bend Radius

TIA/EIA-568-B.1-2 Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements - Addendum 2 - Grounding and Bonding Requirements for Screened Balanced Twisted-Pair Horizontal Cabling

TIA/EIA-568-B.1-3 Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements - Addendum 3 - Supportable Distances and Channel Attenuation for Optical Fiber Applications by Fiber Type

TIA/EIA-568-B.1-4 Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements - Addendum 4 - Recognition of Category 6 and 850 nm Laser-Optimized 50/125 μ m Multimode Optical Fiber Cabling

TIA/EIA-568-B.1-5 Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements - Addendum 5 - Telecommunications Cabling for Telecommunications Enclosures

TIA/EIA-568-B.2 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Cabling Components

TIA/EIA-568-B.2-1 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Components - Addendum 1 - Transmission Performance Specifications for 4-Pair 100 Ohm Category 6 Cabling

TIA/EIA-568-B.2-2 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling Components - Addendum

TIA/EIA-568-B.2-3 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling - Addendum 3 - Additional Considerations for Insertion Loss and Return Loss Pass/Fail Determination

TIA/EIA-568-B.2-4 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Components - Addendum 4 - Solderless Connection Reliability Requirements for Copper Connecting Hardware

TIA/EIA-568-B.2-5 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling Components - Addendum 5 - Corrections to TIA/EIA-568-B.2

TIA/EIA-568-B.2-6 Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Cabling Components - Addendum 6 - Category 6 Related Component Test Procedures

TIA/EIA-568-B.3 Optical Fiber Cabling Components Standard

TIA/EIA-568-B.3-1 Optical Fiber Cabling Components Standard - Addendum 1 - Additional Transmission Performance Specifications for 50/125 um Optical Fiber Cables

BICSI Structured Cabling Standards and Practices

If any discrepancies exist between these standards and the technical specifications of this document, the technical specifications of this document will apply.

18.3 Project Smoke Rating

All cable and related parts installed in plenum air spaces shall be plenum rated. Cable and related parts installed in non-plenum areas may be raiser rated.

18.4 Cable Demolition

Structured Cabling Contractor shall remote all unneeded data, voice and video distribution cables, as designated on demolition plans, back to their source. All faceplates and jacks associated with demoed cables shall be removed. Workstation outlet locations that are not reused for new cables shall be covered with stainless steel blank faceplates.

18.5 Cable Pathways and Support

18.5.1 By Electrical Contractor

The site electrical contractor is responsible for conduit sleeves, outlet boxes and conduit pathways to accessible ceilings, as indicated on drawings. However, the structured cabling contractor is expected to provide and install pathway that may be required to complete the installation of their cables in a workmanship like manner. All pathway work must be coordinated with the site construction manager.

18.5.2 By Structured Cabling Contractor

Structured Cabling Contractor shall provide cable support for data, voice and video cabling in corridors and all other spaces in accordance with BISCII specifications.

18.5.3 Back Board

Each wiring closet shall be provided with wall-mounted backboard to facilitate equipment mounting. Backboards shall be A/C rated 5/8-inch plywood. Backboards shall be painted using a fire retardant paint on all surfaces, which is light gray in color.

18.5.4 Equipment Racks

Provide and securely install 19-inch floor or wall mount equipment racks as indicated on the rack elevation drawings. Racks must be permanently mounted to floor or wall.

Enclosed wall racks are to be Middle Atlantic DWR-XX-26 or SR-XX-28 or equivalent with two 4" quiet fans installed. Enclosed racks must be provided with lockable and vented front doors unless noted otherwise.

Enclosed floor racks are to be Middle Atlantic MRK or WRK series or equivalent.

Relay racks shall be Middle Atlantic RL10-45 series or equivalent.

Provide and install all wire managers, rack shelves, rack drawers and power strips as indicated on rack elevation drawings. Refer to rack elevation drawings for the number, size, model and placement of these items.

18.5.4.1 Grounding

Each installed rack is to be grounded to the closets telecommunications grounding bus bar. Ground connections shall use #6 THHN copper cable connected directly to rack metal. All grounding lugs shall be Panduit and must be installed using Panduit crimp tools of the size and type intended for the lug.

18.5.5 Cable Routing

All cable is to be concealed, either installed above drop ceilings, in access tunnels, in surface raceway or fished through walls. No exposed cable is allowed.

However, the cabling contractor will supply all J-hooks, cable tray, conduit, raceway, surface boxes, communications poles and mud rings required for cable pathways.

Installation methods must follow TIA/EIA-568A standards including cable support, pulling force, minimum bend radius and minimum distance from sources of electrical interference.

18.5.6 Surface Raceway

Use of surface raceway is to be avoided. Consult with consultant and construction manager for approval prior to installing any surface raceway.

Panduit LD5, LD10 raceway is preferred in areas where no existing raceway must be matched.

Coordinate color choice with owner. Raceway should be sized to maintain a fill ratio of 50% or less.

All raceway fittings for inside and outside corners and drop ceiling fittings must be designed to maintain a minimum 1-inch cable bend radius.

All raceway and surface boxes shall be installed using anchors or screws. Adhesive mounting is not acceptable.

18.5.7 Cable Tray

Provide and install GS Metals Flextray or equivalent continuous, rigid, welded steel wire mesh cable management tray as indicated on prints.

Install and support cable management system in accordance with span load criteria of L/240.

Install cable management system using hardware; splice connectors, support components, and accessories furnished by manufacturer.

18.5.8 Penetrations

Wall and floor penetrations or corings must be provided with EMT sleeves and protective bushings to prevent damage to cable as it is pulled through sleeves.

Any Penetrations through fire rated walls and floors shall utilize Specified Technologies Inc, EZ-Path fire rated pathways installed in accordance with manufacturer's guidelines and instructions.

The maximum fill for all sleeves shall not exceed 60% of capacity.

18.5.9 Fire-stopping

Any penetrations of fire rated walls that do not utilize the STI EZ-Path system shall be fire-stopped using a UL approved putty to restore the wall to its original fire rating. *Proper fire stopping is not possible if penetrations exceed a 60% fill ratio.* Fire-stopping material must be removable to allow future cable system upgrades.

18.5.10 Cable Support

Cables must be supported at least every five (5) feet. Tie-wraps are not acceptable for cable support. Cable trays and Caddy "J" hooks are the preferred method of cable support. For bundles of six or less cables, building metal truss structure may be used to provide support.

Velcro wraps with a minimum width of 3/8" are acceptable for cable support. Tie-wraps may be used to organize cable as long as they do not deform the cable jacket and are not supporting the weight of the cable.

18.6 Premise Cable Termination

18.6.1 Acceptable Manufacturers

The following manufacturers of jacks and patch panels are acceptable for this project:

Panduit

Refer to drawings for specified model numbers of parts.

18.6.2 Faceplates, Jacks and Patch Panels

All termination equipment must be from a single manufacturer. Faceplates must be modular and capable of holding a variety of modular jacks including blanks, 8-pin data, 6-pin voice, RCA audio, S-video, VGA, etc. A single gang faceplate must be available to hold from two to six jacks. Faceplates must provide a labeling area covered by a clear protective cover.

Where required a 106-style mounting frame must be available to hold two or four jacks.

Where required a Decora-style mounting frame must be available to hold two or four jacks.

Any unused faceplate positions must be filled with blank inserts that match the color of the faceplate.

Rack-mounted patch panels must be modular, utilizing the same jacks installed in workstation outlet locations. This should allow for the replacement of a single defective jack in a patch panel.

18.6.3 Wiring Pattern

All jacks and patch panels shall be wired using the T568B wiring pattern.

18.6.4 Faceplate color

Data faceplate color shall match electrical faceplates. Coordinate final color selection with owner.

18.6.5 Jack color

Data and other jack shall match faceplate color unless noted otherwise on technology prints.

18.7 Category 6 Cable

18.7.1 Acceptable Cable Manufacturers

All cable manufacturers that participate in a joint warranty with Panduit at the time of the bid are considered acceptable.

18.7.2 UTP Maintenance Loops

At the rack location provide a minimum maintenance loop of 8 feet of cable neatly dressed into the rack, cable tray or attached to a backboard. At the outlet location provide 1 foot of cable in accessible ceiling above the outlet box.

For drops supporting wireless access points or security cameras, provide 20 feet of cable neatly coiled in a large loop and secured above lay-in ceiling.

For drops installed in modular furniture, provide 20 feet of cable neatly coiled in a large loop and secured above lay-in ceiling above conduit feeding furniture.

18.7.3 Labeling

Each patch panel jack and workstation jack must be clearly marked with a computer printed label showing the Cable ID. Hand printed labels are not acceptable.

For faceplate jack labels, the preferred method of labeling is using a protective label holder built into the faceplate. Adhesive labels on faceplates or raceway are undesirable. If they are used they must conform to defacement and adhesion specifications of UL969.

Each UTP cable shall be marked with its Cable ID using a Brady, Panduit or Brother self-laminating label. Each end of the cable must be labeled within one foot of the termination point.

18.8 Cable Identification Plan

Refer to provided drawings for cable ID plan for site.

18.9 UTP Testing

All category 6 cables are to be certified for Category 6 operation using a cable tester that provides TIA/EIA TSB-67 level II accuracy. The tester must maintain an electronic log of test results. Each cable must be identified on the test equipment using its correct Cable ID.

Prior notification for all phases of testing will be given to the owner, or its designated representative, allowing them to be present during testing procedures. The owner may elect to have some or all cables tested by a third party prior to final acceptance of the completed job.

Any cable that does not pass the testing requirements must be repaired or replaced at the contractor's expense. Any cables that are damaged during installation must be replaced. Splicing of cables is not acceptable.

Test results shall be presented to the client in both printed format and on CD-ROM in PC Excel format and in the raw format exported from the test equipment. The model and software version of the test equipment must be shown in a README file on the CD-ROM. This is a condition for final acceptance of the completed job.

18.10 Category 6 Patch Cords

Provide category 6 patch cords of the length and color indicated in the table below. Patch cords must be factory built using category 6 stranded cable and must be non-booted. Provide patch cords based on the following percentages of total drops installed in the building. Deliver patch cords directly to owner's representative and obtain signed proof of delivery. Do not leave patch cords in wiring closet.

For Patch Panel connections

12 inch black – 100%

For Workstations connections

5-foot black – 20%

7-foot black – 45%

14-foot black – 5%

25-foot black – 2%

18.11 Category 6 Backbones

Category 6 rated cables will be utilized for data backbones between closets located less than 95 meters apart. Refer to diagrams for number of cables to provide. Category 6 backbone cables shall be terminated using red category 6 jacks.

18.12 Voice Backbones

Refer to diagrams for the size and location of voice backbone cables.

18.12.1 Category 3 Cable

Backbones will use 24 AWG UTP cable verified to Category 3. Cable shall be riser-rated or plenum-rated as required to meet the smoke requirements of installation environment.

ACCEPTABLE MANUFACTURERS

The following manufacturers of cable are acceptable:

General
Belden
Berk-Tek
Superior/Essex
Mohawk

18.12.2 Terminations

Backbones shall be terminated using 100-pair 110-style punch down blocks using four pair connector blocks. Cable shall be labeled using computer printed labels indicating the destination of the cable and the pair numbers.

18.12.3 Underground Cable

All backbone cables installed underground between buildings shall be rated for direct burial. This is true even if the cable is enclosed in sub duct or PVC conduit.

Underground rated cables shall be limited to 50 feet inside building structure, unless routed inside of EMT conduit.

18.12.4 Lightning Suppression

All backbone cables running outside of a building's zone of protection shall be provided with solid-state lightning suppression for each end of each pair. Lightning suppression equipment must be properly

grounded. Suppressors shall use 110 style terminations. Underground cable shields must be properly grounded. Lightning suppression shall be Porta brand.

18.12.5 Voice Patch Panels

To allow the patching of phone connections, each wiring closet will be provided with a phone patch panel. All phone patch panels shall use 8-pin modular jacks wired using the USOC pattern. Each voice patch panel jack will be cross-connected to a 110 block located on the backer board in the wiring closet.

Refer to diagrams for the number of Voice Patch Panels jacks to provide in each wiring closet.

18.12.6 Voice Backbone Testing

All backbone cables shall be tested for continuity and wire-map using a cable tester. The tester must maintain an electronic log of test results. Each cable must be identified on the test equipment using its correct Cable ID.

Any cable that does not pass the testing requirements must be repaired or replaced at the contractor's expense. Any cables that are damaged during installation must be replaced. Splicing of cables is not acceptable.

Test results shall be presented to the client in both printed format and on CD-ROM in PC Excel format and in the raw format exported from the test equipment. The model and software version of the test equipment must be shown in a README file on the CD-ROM. This is a condition for final acceptance of the completed job.

18.13 Fiber Backbones

Refer to diagrams for the size and location of fiber backbone cables.

18.13.1 Acceptable Manufacturers

The following manufacturers of cable are acceptable:

- General
- Superior/Essex
- Belden
- Berk-Tek
- Corning
- General

18.13.2 Multi-mode Fiber

Shall be 50/125-micron dual window fiber rated for transmission at 850 nm and 1300 nm.

18.13.3 Maximum Attenuation

- At 850 nm maximum attenuation 3.5 dB/km, modal bandwidth 500 MHz-km
- At 1300 nm maximum attenuation 1.5 dB/km, modal bandwidth 500 MHz-km

18.13.4 Multimode Connectors

Multimode fiber connectors shall be SC. Fiber termination trays shall utilize duplex SC couplers. Multimode fibers shall use beige couplers. Fiber connectors shall be Panduit OptiCam Pre-Polished cam-lock type.

18.13.5 Single mode Fiber

Shall be 10/125-micron dual window fiber rated for transmission at 1310 nm and 1550 nm.

18.13.6 Maximum Attenuation

- At 1310 nm maximum attenuation 1.0 dB/km
- At 1550 nm maximum attenuation 1.0 dB/km

18.13.7 Single Mode Connectors

Unless stated otherwise, all single mode fiber connectors shall be SC. Fiber termination trays shall utilize duplex SC couplers. Single mode fibers shall use blue couplers. Fiber connectors shall be Panduit OptiCam Pre-Polished cam-lock type.

18.13.8 Underground Cable

All backbone cables installed underground between buildings shall be rated for direct burial. This is true even if the cable is enclosed in subduct or conduit.

18.13.9 Innerduct

All fiber backbone runs shall be installed in 1" innerduct to provide protection and insure proper bend radius. This includes when entering racks, termination cabinets, and multimedia outlets. Innerduct shall be riser-rated or plenum-rated as required to meet the smoke requirements of installation environment.

18.13.10 Armored Cable

Armor cable may be installed without innerduct.

18.13.11 Termination Cabinets

Fiber termination cabinets shall be rack mount style and must provide storage space for fiber management. Cabinets should be sized to handle the required number of fibers and should be loaded with the required number of couplers.

Fiber termination cabinets shall be Panduit FRME series.

18.13.12 Labeling

Each fiber backbone shall be labeled using computer printed labels indicating the destination of the backbone and the strand numbers. Each backbone end will clearly state where the opposite end is terminated.

18.13.13 Maintenance loops

Provide neatly coiled and secured to a rack or backer board, a minimum 20-foot fiber maintenance loop at each end of fiber backbones. For exterior runs over 1000 feet in length, provide a 20-foot maintenance loop inside of a pull box, every 500 feet

18.13.14 Fiber Testing

All fiber cables shall be tested using a laser source and power meter to record optical power loss. Tests must be performed at 850 and 1300 nm for multimode fiber and at 1310 and 1550 nm for single mode fiber and must be performed in each direction. The tester must maintain an electronic log of test results. Each cable must be identified on the test equipment using its correct Cable ID.

Prior notification for all phases of testing will be given to the Owner, or its designated representative, allowing them to be present during testing procedures. The Owner may elect to have some or all cables tested by a third party prior to final acceptance of the completed job.

Any fiber strand with a measured loss value more than 2.5 dB over the predicted loss value for the link shall be considered as failed.

Any cable that does not pass the testing requirements must be repaired or replaced at the contractor's expense. Any cables that are damaged during installation must be replaced.

Test results shall be presented to the client in both printed format and on CD-ROM in PC Excel format and in the raw format exported from the test equipment. The model and software version of the test equipment must be shown in a README file on the CD-ROM. This is a condition for final acceptance of the completed job.

18.14 Close Out

18.14.1 As-Built Floor Plan

The contractor will prepare a final as-built floor plan that shows the location of each wiring closet and all workstation outlets in the building. Each workstation outlet will be labeled with the cable IDs of all cables at that location. The routing of all fiber and other backbone cables will be shown along with their cable ID numbers.

This floor plan will be provided to the customer in printed form (a minimum of 3 copies) and on CD-ROM in Acrobat PDF format and DXF format.

A laminated copy of the as-built floor plan shall be mounted in each wiring closet to assist in equipment patching.

Provide a copy of the completed Panduit 20-year installation warranty.

18.14.2 **Documentation**

Provide an as-built floor plan of all buildings, which show the location of where each cable drop is installed. Indicate the Cable ID of the cable drop on the as-built floor plan.

Test results shall be presented to the client in both printed format and on CD-ROM in PC Excel format and in the raw format exported from the test equipment. The model and software version of the test equipment must be shown in a README file on the CD-ROM. This is a condition for final acceptance of the completed job.

19 Loose Equipment – Audio Visual

19.1 Overview

Refer to the provided bid forms for manufacturer, model of equipment and quantity to be provided.

19.2 Partial Bids

Partial bids will be considered and may be awarded if this is in the best interest of the Owner. Bidders are not required to bid on all items on the materials list.

19.3 Product Requirements

19.3.1 Approved Products

Products listed in the materials list are Owner's preferred makes and models. Any vendor responding with alternate equipment shall clearly state that the equipment is other than specified. Provide manufacture cut sheets for any alternate equipment offered.

19.3.2 New Equipment

All equipment provided shall be new and of the latest model and version available.

19.3.3 Warranty

All active equipment shall have a minimum one-year manufacturer's warranty. Vendor shall facilitate warranty repair or replacement for Owner for a period of one-year from purchase date.

19.4 Fright

The base bid must include all fright charges for delivery of equipment to owner's location.

19.5 Preorder and Storage of Equipment

Equipment will be installed in phases over an 18 to 20 month period as areas of the building are turned over to the owner and become occupied. Contractors shall purchase all active equipment devices at the start of the project to insure that all systems installed over the term of the project utilize the same models of equipment. Contractor shall store equipment at their facility until installed. Contractor must provide proof of insurance for all stored equipment

19.6 Materials List

The materials/bid form list is provided in MS Excel format.

A completed hard copy with your pricing must be attached to your bid forms and a digital copy must be included in your bid response envelope.

20 Intent to Bid

Intent to bid form must be returned via fax or e-mail by to:

Melissa Miller
Secant Technologies
Fax: 269-375-4222
Email: mmiller@secantcorp.com

Company Name: _____

Address: _____

Contact Name: _____

E-Mail Address: _____

Phone: _____

Fax: _____

21 Vendor Profile

All subcontractors must also complete a Vendor Profile form.

Company Name: _____

Address: _____

Contact Name: _____

E-Mail Address: _____

Phone: _____

Fax: _____

Date Founded: _____ Number of employees: _____

Total revenue last fiscal year: _____

Type of Organization (Corporation, Partnership, LLC, etc.): _____

Has organization ever had a contract terminated prior to completion: _____

Has organization ever failed to complete a project: _____

Has organization ever filed for bankruptcy, reorganization or receivership: _____

Number of full-time technicians qualified to perform work on this project: _____

Has organization ever been involved in a lawsuit with Owners, Engineers
or other contractors within the last five years: _____

Name of Project Manager: _____

List relevant certifications: _____

The undersigned certifies to the accuracy of the information provided on this form and attachments.

Signature: _____ Date: _____

Title: _____

22 Familial Disclosure Form

22.1 Statement of Disclosure

All proposals shall be accompanied by a notarized statement disclosing any familial relationship (or lack of a relationship) that exists between the Owner or any employee of the bidder and any member of the Board of Education of the St. Joseph Public Schools or the Superintendent of the School District.

The District shall not accept a bid that does not include a sworn and notarized disclosure statement.

22.2 Disclosure Form

St. Joseph Public Schools
3275 Lincoln Avenue,
St. Joseph, MI 49085

Dear Ladies and Gentlemen:

I/We the undersigned acknowledge the details stated in Section 23.1 – “Statement of Disclosure”, regarding familial relationship (or lack of) that exists between the Owner or any employee of the bidder and any member of the St. Joseph Public Schools Board of Education or the Superintendent of the School District.

We have prior familial knowledge of parties involved. (Attach clarification.)

We have no prior familial knowledge of parties involved.

Signature

Company Name

Notary Public

_____ County, State _____

My Commission Expires: _____

23 Non-Collusion Affidavit

STATE OF MICHIGAN

COUNTY OF BERRIEN

The undersigned bidder or agent, being duly sworn, on oath says that he will not, nor will any other member, representative, or agent of the firm, company, corporation or partnership represented by him, enter into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting, nor to prevent any person from bidding not to induce anyone to refrain from bidding, and that his bid is made without reference to any other bid and without any agreement, understanding, or combination with any other person in reference to such bidding in any way or manner whatever.

Bidder or Agent

Firm or Corporation

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

My commission expires: _____

24 Technology Vendor References

Include at least three references for similar projects. Any subcontractors must also provide references.

Customer Name: _____

Address: _____

Contact Name: _____

Contact Title: _____

Phone: _____

E-Mail Address: _____

Date Started & Completed: _____

Dollar Amount of Project: _____

Comments: _____

Customer Name: _____

Address: _____

Contact Name: _____

Contact Title: _____

Phone: _____

E-Mail Address: _____

Date Started & Completed: _____

Dollar Amount of Project: _____

Comments: _____

References Continued

Customer Name: _____

Address: _____

Contact Name: _____

Contact Title: _____

Phone: _____

E-Mail Address: _____

Date Started & Completed: _____

Dollar Amount of Project: _____

Comments: _____

Customer Name: _____

Address: _____

Contact Name: _____

Contact Title: _____

Phone: _____

E-Mail Address: _____

Date Started & Completed: _____

Dollar Amount of Project: _____

Comments: _____

25 Proposal Forms

FOR: St. Joseph Public Schools
Project 2344A – High School Technology

TO: St. Joseph Public Schools
3275 Lincoln Ave.
St. Joseph, MI 49085

PROPOSAL BY: _____
(Name & address) _____

BASE BID: We, the undersigned, having familiarized ourselves with local conditions affecting the cost of work and with the bidding documents on file at the office of the Owner, hereby propose to perform the work required by said bidding documents in a workman-like manner for the Bid Categories as shown on this bid form for the above-named project in accordance with contract documents as prepared by the Owner for the amounts hereinafter stated, such amounts constituting the base bid, including **Addendum No.(s)**:

Acknowledge Addendums on line above

25.1 Exceptions

State any exceptions taken to project specifications:

25.2 Base Bid - Packages

| | |
|--|-----------------|
| Audio Visual (AV1 to AV7 and Digital Signage) | \$ _____ |
| Intrusion Alarm System | \$ _____ |
| Clock/Bell/Paging System | \$ _____ |
| Access Control System | \$ _____ |
| Surveillance Camera System | \$ _____ |
| Structured Cabling (Including cable demo) | \$ _____ |
| Loose Equipment – Audio Visual (Excel form must be printed and attached) | \$ _____ |
| Performance Bond..... | \$ _____ |
| TOTAL BASE BID AMOUNT..... | \$ _____ |

25.3 Mandatory Price Details

Provide price details for all packages responded to above. Unit prices must include all parts and labor to add or delete listed system or component.

25.3.1 Audio Visual

| System | Quantity | Add/Delete Price | Extended |
|---------------------------------|-----------------|-------------------------|-----------------|
| AV1 | _____ | \$ _____ | \$ _____ |
| AV2 | _____ | \$ _____ | \$ _____ |
| AV3 | _____ | \$ _____ | \$ _____ |
| AV4 | _____ | \$ _____ | \$ _____ |
| AV5 | _____ | \$ _____ | \$ _____ |
| AV6 | _____ | \$ _____ | \$ _____ |
| AV7 | _____ | \$ _____ | \$ _____ |
| Digital Signage – 32 inch | _____ | \$ _____ | \$ _____ |
| Digital Signage – 40 inch | _____ | \$ _____ | \$ _____ |
| Digital Signage – 52 inch | _____ | \$ _____ | \$ _____ |

25.3.2 Intrusion Alarm

| | | | |
|--|-------|----------|----------|
| Intrusion Alarm – Key Pad | _____ | \$ _____ | \$ _____ |
| Intrusion Alarm – Motion Sensor | _____ | \$ _____ | \$ _____ |
| Intrusion Alarm – Long Range Motion Sensor | _____ | \$ _____ | \$ _____ |
| Intrusion Alarm – Annunciator | _____ | \$ _____ | \$ _____ |

25.3.3 Clock/Bell/Paging System

| | | | |
|-----------------------|-------|----------|----------|
| Clock Type C1 | _____ | \$ _____ | \$ _____ |
| Clock Type C2 | _____ | \$ _____ | \$ _____ |
| Clock Type C3 | _____ | \$ _____ | \$ _____ |
| Clock Type C4 | _____ | \$ _____ | \$ _____ |
| Clock Type C5 | _____ | \$ _____ | \$ _____ |
| Speaker Type S1 | _____ | \$ _____ | \$ _____ |
| Speaker Type S2 | _____ | \$ _____ | \$ _____ |
| Speaker Type S3 | _____ | \$ _____ | \$ _____ |
| Speaker Type S4 | _____ | \$ _____ | \$ _____ |
| Speaker Type S5 | _____ | \$ _____ | \$ _____ |

25.3.4 Access Control

| | | | |
|--|-------|----------|----------|
| Access Controlled Door (Door Hardware by Others) | _____ | \$ _____ | \$ _____ |
| Access Controlled Door Athletic Wing (Provide Electric Strike).... | _____ | \$ _____ | \$ _____ |
| Access Controlled Door Athletic Wing (Provide Electric Retractor) | _____ | \$ _____ | \$ _____ |

25.3.5 Surveillance Camera System

| System | Quantity | Add/Delete Price | Extended |
|---|-----------------|-------------------------|-----------------|
| Camera Type CM1 and Camera License | _____ | \$ _____ | \$ _____ |
| Camera Type CM2 and Camera License | _____ | \$ _____ | \$ _____ |
| Camera Type CM3 and Camera License | _____ | \$ _____ | \$ _____ |
| Camera Type CM4 and Camera License | _____ | \$ _____ | \$ _____ |
| Camera Type CM5 180 degree and Camera License | _____ | \$ _____ | \$ _____ |
| Camera Type CM5 360 degree and Camera License | _____ | \$ _____ | \$ _____ |
| Camera Type CM6 180 degree and Camera License | _____ | \$ _____ | \$ _____ |
| Parking Lot Camera Subsystem (Cameras, Wireless, Masks) | | | \$ _____ |

25.3.6 Structured Cabling

| | | | |
|--|-------|----------|----------|
| Category 6 location with one drop | _____ | \$ _____ | \$ _____ |
| Category 6 location with two drops | _____ | \$ _____ | \$ _____ |
| Category 6 location with three drops | _____ | \$ _____ | \$ _____ |

25.3.7 Performance and Materials Bond

Bond cost per \$1000 of project cost..... \$ _____

25.4 Loose Equipment – Network Electronics and Audio Visual

A completed hard copy of Excel based Loose Equipment form must be attached to your bid forms and a digital copy of Excel file must be included in your bid response envelope.

25.5 Voluntary Alternates

VOLUNTARY ALTERNATES: Attach a separate sheet if proposing Voluntary Alternates. Prices shall include all applicable costs for taxes, insurance, bonds and fees

25.6 Cut Sheets

Include manufacturer cut sheets for key components used in your design. Cut sheets are not required for items that exactly match the specified models in this RFP.

25.7 Signature

In submitting this bid, we understand the right is reserved by the Owner to reject any or all bids. It is further agreed that this bid is binding for the period of forty-five (45) days.

DATE _____ 2012

FIRM NAME _____

BY _____

(Authorized Signature)

(Typed or Printed Signature)

TITLE _____

OFFICIAL ADDRESS _____

PHONE NO. _____ FAX NO. _____